

Date: August 21, 2021



2000 Corporate Drive  
Canonsburg, PA 15317  
724-416-2000

**Subject:** Structural Analysis Report

**Carrier Designation:** DISH Network Co-Locate  
**Site Number:** SESEA00401B  
**Site Name:** WA-CCI-T-880329

**Crown Castle Designation:** **BU Number:** 880329  
**Site Name:** SOUTH HILL MALL  
**JDE Job Number:** 663227  
**Work Order Number:** 1994146  
**Order Number:** 564913 Rev. 1

**Engineering Firm Designation:** **Crown Castle Project Number:** 1994146

**Site Data:** 3150 S MERIDIAN, PUYALLUP, PIERCE County, WA  
Latitude 47° 9' 43.46", Longitude -122° 17' 40.04"  
120 Foot - Monopole Tower

**City of Puyallup  
Building  
REVIEWED  
FOR  
COMPLIANCE**

BSnowden  
10/27/2023  
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Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration

**Sufficient Capacity**

**\*The structure has sufficient capacity once the loading changes, described in the Recommendations section of this report, are completed.**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 104 mph. Applicable Standard references and design criteria are listed in Section 2 – Analysis Criteria.

Structural analysis prepared by: Subhash Mandal

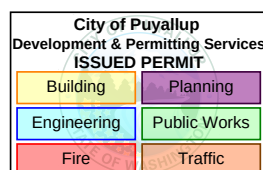
10/19/23

Respectfully submitted by:

Truc Lac, P.E., S.E.  
Senior Project Engineer



Truc  
Lac  
Digitally signed  
by Truc Lac;  
Date: 2023.10.19  
11:07:25 -0500



License Expires: 02/24/2025

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Non-Carrier Equipment To Be Conditionally Removed

Table 3 - Other Considered Equipment

### 3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Component Stresses vs. Capacity - LC7

4.1) Recommendations

### 5) APPENDIX A

tnxTower Output

### 6) APPENDIX B

Base Level Drawing

### 7) APPENDIX C

Additional Calculations

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.

Full sized legible color plans are required to be provided by the permittee on site for inspection.

## 1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by NAPCO.

## 2) ANALYSIS CRITERIA

|                             |           |
|-----------------------------|-----------|
| <b>TIA-222 Revision:</b>    | TIA-222-H |
| <b>Risk Category:</b>       | III       |
| <b>Wind Speed:</b>          | 104 mph   |
| <b>Exposure Category:</b>   | C         |
| <b>Topographic Factor:</b>  | 1         |
| <b>Ice Thickness:</b>       | 1 in      |
| <b>Wind Speed with Ice:</b> | 30 mph    |
| <b>Seismic Ss:</b>          | 1.264     |
| <b>Seismic S1:</b>          | 0.436     |
| <b>Service Wind Speed:</b>  | 60 mph    |

**Table 1 - Proposed Equipment Configuration**

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model               | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------|-----------------------------|----------------------|---------------------|
| 111.0               | 111.0                      | 3                  | fujitsu              | TA08025-B604                | 1                    | 1-1/2               |
|                     |                            | 3                  | fujitsu              | TA08025-B605                |                      |                     |
|                     |                            | 3                  | jma wireless         | MX08FRO665-21 w/ Mount Pipe |                      |                     |
|                     |                            | 1                  | raycap               | RDIDC-9181-PF-48            |                      |                     |
|                     |                            | 1                  | tower mounts         | Commscope MC-PK8-DSH        |                      |                     |

**Table 2 - Non-Carrier Equipment To Be Conditionally Removed**

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model             | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------|---------------------------|----------------------|---------------------|
| 111.0               | 114.0                      | 2                  | andrew               | VHLP2-11                  | -                    | -                   |
|                     |                            | 2                  | dragonwave           | HORIZON DUO               |                      |                     |
|                     | 113.0                      | 1                  | andrew               | PX2F-52-NXA               |                      |                     |
|                     |                            | 1                  | motorola             | 5830BHC                   |                      |                     |
|                     | 111.0                      | 1                  | clearwire            | CW JUNCTION BOX           |                      |                     |
|                     |                            | 3                  | kathrein             | 840 10054 w/ Mount Pipe   |                      |                     |
|                     |                            | 3                  | nokia                | FWHR                      |                      |                     |
|                     |                            | 1                  | tower mounts         | Side Arm Mount [SO 103-3] |                      |                     |
|                     |                            |                    |                      |                           |                      |                     |

**Table 3 - Other Considered Equipment**

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer       | Antenna Model              | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------------|----------------------------|----------------------|---------------------|
| 122.0               | 126.0                      | 1                  | db spectra                 | DS7C06P36U-D w/ Mount Pipe | 5<br>1               | 1/4<br>7/8          |
|                     | 124.0                      | 3                  | radwin                     | RADWIN 2000C               |                      |                     |
|                     | 122.0                      | 1                  | commscope                  | VHLPX3-18-2WH              |                      |                     |
|                     | 123.0                      | 2                  | samsung telecommunications | 2.5GHZ RRH-V3              | 1<br>3               | 1/4<br>1-7/16       |

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer       | Antenna Model                      | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------------|------------------------------------|----------------------|---------------------|
|                     |                            | 2                  | samsung telecommunications | OPTIC FIBER JUNCTION CYLINDER      | 2                    | 1-1/2               |
|                     |                            | 2                  | samsung telecommunications | POWER JUNCTION CYLINDER            |                      |                     |
|                     | 122.0                      | 1                  | tower mounts               | Commscope MC-CP12M-12-126          |                      |                     |
|                     |                            | 1                  | ceragon                    | FIBEAIR IP-20C                     |                      |                     |
|                     | 120.0                      | 3                  | commscope                  | CDX68T-DS-43_TMO                   |                      |                     |
|                     |                            | 3                  | commscope                  | FFVV-65C-R3-V1_TMO                 |                      |                     |
|                     |                            | 2                  | commscope                  | HCS 2.0                            |                      |                     |
|                     |                            | 3                  | nokia                      | AEHC                               |                      |                     |
|                     |                            | 3                  | nokia                      | AHFIG_TMO                          |                      |                     |
|                     |                            | 3                  | nokia                      | AHLOA_T-MOBILE                     |                      |                     |
|                     |                            | 3                  | samsung telecommunications | RRH-P4                             |                      |                     |
|                     | 119.0                      | 1                  | andrew                     | VHLP1-23                           |                      |                     |
|                     |                            | 2                  | dragonwave                 | HORIZON COMPACT PLUS               |                      |                     |
| 111.0               | 111.0                      | -                  | -                          | -                                  | 7<br>3<br>3          | 1/4<br>3/8<br>1/2   |
| 90.0                | 91.0                       | 3                  | ericsson                   | RRUS 32 B2                         | -                    | -                   |
|                     |                            | 3                  | ericsson                   | RRUS 32 B66A                       |                      |                     |
|                     | 90.0                       | 1                  | tower mounts               | Side Arm Mount [SO 901-3]          |                      |                     |
| 89.0                | 91.0                       | 2                  | antel                      | BXA-70040-8CF-EDIN-X w/ Mount Pipe | 8                    | 1-5/8               |
|                     |                            | 1                  | antel                      | BXA-70090-8CF-EDIN-X w/ Mount Pipe |                      |                     |
|                     |                            | 3                  | ericsson                   | 4449                               |                      |                     |
|                     |                            | 3                  | ericsson                   | RADIO 4408                         |                      |                     |
|                     |                            | 3                  | jma wireless               | MX06FRO840-02 w/ Mount Pipe        |                      |                     |
|                     |                            | 3                  | jma wireless               | MX10FRO840-XX w/ Mount Pipe        |                      |                     |
|                     |                            | 2                  | raycap                     | RVZDC-6627-PF-48                   |                      |                     |
|                     |                            | 3                  | vzw                        | Sub6 Antenna w/ Mount Pipe         |                      |                     |
|                     | 89.0                       | 1                  | tower mounts               | T-Arm Mount [TA 602-3_KCKR]        |                      |                     |
| 80.0                | 80.0                       | 6                  | andrew                     | TMZXX-6516-R2M w/ Mount Pipe       | 6                    | 1-5/8               |
|                     |                            | 3                  | nokia                      | FRIG                               |                      |                     |
|                     |                            | 1                  | raycap                     | RNSDC-7771-PF-48                   |                      |                     |
|                     |                            | 1                  | tower mounts               | Platform Mount [LP 303-1]          |                      |                     |
|                     | 78.0                       | 3                  | commscope                  | CBC6AE7LQ-DS-43                    |                      |                     |
|                     |                            | 3                  | commscope                  | FFHH-65C-R3 w/ Mount Pipe          |                      |                     |
|                     |                            | 3                  | nokia                      | AHLOA                              |                      |                     |
|                     |                            | 3                  | nokia                      | FHFB                               |                      |                     |

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------|---------------|----------------------|---------------------|
|                     |                            | 1                  | nokia                | FRLB          |                      |                     |

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

| Document                                 | Reference | Source   |
|------------------------------------------|-----------|----------|
| 4-GEOTECHNICAL REPORTS                   | 1582988   | CCISITES |
| 4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS | 1855128   | CCISITES |
| 4-TOWER MANUFACTURER DRAWINGS            | 6358620   | CCISITES |

#### 3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

#### 3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 3 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

| Section No. | Elevation (ft) | Component Type | Size                   | Critical Element | P (K)  | SF*P <sub>allow</sub> (K) | % Capacity | Pass / Fail |
|-------------|----------------|----------------|------------------------|------------------|--------|---------------------------|------------|-------------|
| L1          | 120 - 80.25    | Pole           | TP27.973x20.5x0.25     | 1                | -13.52 | 1025.88                   | 49.9       | Pass        |
| L2          | 80.25 - 46     | Pole           | TP33.78x26.721x0.3125  | 2                | -22.22 | 2014.40                   | 65.8       | Pass        |
| L3          | 46 - 25        | Pole           | TP36.971x32.2784x0.375 | 3                | -27.21 | 2645.64                   | 66.1       | Pass        |
| L4          | 25 - 0         | Pole           | TP40.789x35.2946x0.5   | 4                | -36.92 | 3064.89                   | 74.4       | Pass        |
|             |                |                |                        |                  |        |                           | Summary    |             |
|             |                |                |                        |                  |        | Pole (L4)                 | 74.4       | Pass        |
|             |                |                |                        |                  |        | Rating =                  | 74.4       | Pass        |

**Table 6 - Tower Component Stresses vs. Capacity - LC7**

| Notes                                               | Component                          | Elevation (ft) | % Capacity | Pass / Fail  |
|-----------------------------------------------------|------------------------------------|----------------|------------|--------------|
| 1                                                   | Anchor Rods                        | 0              | 63.3       | Pass         |
| 1                                                   | Base Plate                         | 0              | 64.8       | Pass         |
| 1                                                   | Base Foundation (Structure)        | 0              | 62.2       | Pass         |
| 1                                                   | Base Foundation (Soil Interaction) | 0              | 63.1       | Pass         |
| <b>Structure Rating (max from all components) =</b> |                                    |                |            | <b>74.4%</b> |

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

#### 4.1) Recommendations

**Once the equipment in Table 2 is removed**, the tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**

|                    |         |         |         |         |      |
|--------------------|---------|---------|---------|---------|------|
| Section            | 1       | 2       | 3       | 4       |      |
| Length (ft)        | 39.750  | 38.250  | 25.750  | 30.083  |      |
| Number of Sides    | 12      | 12      | 12      | 12      |      |
| Thickness (in)     | 0.2500  | 0.3125  | 0.3750  | 0.5000  |      |
| Socket Length (ft) | 4.000   | 4.750   | 5.083   | 35.2946 |      |
| Top Dia (in)       | 20.5000 | 26.7210 | 32.2784 | 40.7890 |      |
| Bot Dia (in)       | 27.9730 | 33.7800 | 36.9710 |         |      |
| Grade              | A572-50 |         | A572-65 | A572-50 |      |
| Weight (K)         | 2.6     | 3.9     | 3.6     | 6.2     | 16.3 |

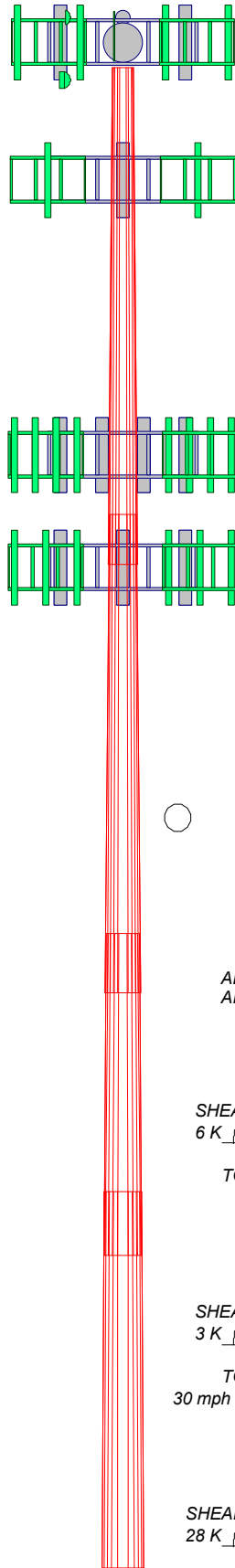
120.0 ft

80.3 ft

46.0 ft

25.0 ft

0.0 ft



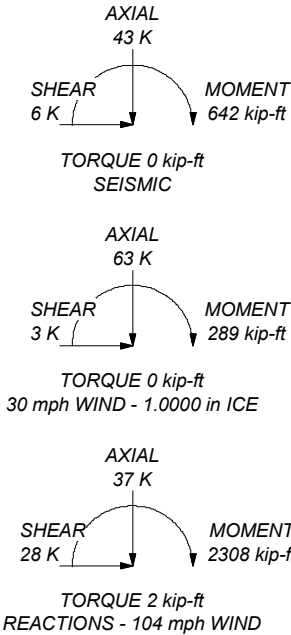
## MATERIAL STRENGTH

| GRADE   | Fy     | Fu     | GRADE   | Fy     | Fu     |
|---------|--------|--------|---------|--------|--------|
| A572-50 | 50 ksi | 65 ksi | A572-65 | 65 ksi | 80 ksi |

## TOWER DESIGN NOTES

1. Tower is located in Pierce County, Washington.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 104 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 30 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. CCISeismic Note: Seismic loads generated by CCISeismic 3.3.7
9. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1
10. TOWER RATING: 74.4%

ALL REACTIONS  
ARE FACTORED





## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- Tower is located in Pierce County, Washington.
- Tower base elevation above sea level: 443.000 ft.
- Basic wind speed of 104 mph.
- Risk Category III.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 30 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- CCISeismic Note: Seismic loads generated by CCISeismic 3.3.7.
- CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 1.0$ ,  $K_{es}(t_i) = 1.0$ ,  $K_{es}(E_v \text{ and } E_h) = 1.0$ .
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

|                                     |                                      |                                    |
|-------------------------------------|--------------------------------------|------------------------------------|
| Consider Moments - Legs             | Distribute Leg Loads As Uniform      | Use ASCE 10 X-Brace Ly Rules       |
| Consider Moments - Horizontals      | Assume Legs Pinned                   | Calculate Redundant Bracing Forces |
| Consider Moments - Diagonals        | √ Assume Rigid Index Plate           | Ignore Redundant Members in FEA    |
| Use Moment Magnification            | √ Use Clear Spans For Wind Area      | SR Leg Bolts Resist Compression    |
| √ Use Code Stress Ratios            | Use Clear Spans For KL/r             | All Leg Panels Have Same Allowable |
| √ Use Code Safety Factors - Guys    | Retention Guys To Initial Tension    | Offset Girt At Foundation          |
| Escalate Ice                        | √ Bypass Mast Stability Checks       | √ Consider Feed Line Torque        |
| Always Use Max Kz                   | √ Use Azimuth Dish Coefficients      | Include Angle Block Shear Check    |
| Use Special Wind Profile            | √ Project Wind Area of Appurt.       | Use TIA-222-H Bracing Resist.      |
| Include Bolts In Member Capacity    | Autocalc Torque Arm Areas            | Exemption                          |
| Leg Bolts Are At Top Of Section     | Add IBC .6D+W Combination            | Use TIA-222-H Tension Splice       |
| Secondary Horizontal Braces Leg     | √ Sort Capacity Reports By Component | Exemption                          |
| Use Diamond Inner Bracing (4 Sided) | Triangulate Diamond Inner Bracing    |                                    |
| SR Members Have Cut Ends            | Treat Feed Line Bundles As Cylinder  |                                    |
| SR Members Are Concentric           | Ignore KL/ry For 60 Deg. Angle Legs  |                                    |

### Poles

- √ Include Shear-Torsion Interaction
- Always Use Sub-Critical Flow
- Use Top Mounted Sockets
- Pole Without Linear Attachments
- Pole With Shroud Or No
- Appurtenances
- Outside and Inside Corner Radii Are Known

## Tapered Pole Section Geometry

| Section | Elevation<br>ft | Section<br>Length<br>ft | Splice<br>Length<br>ft | Number<br>of<br>Sides | Top<br>Diameter<br>in | Bottom<br>Diameter<br>in | Wall<br>Thickness<br>in | Bend<br>Radius<br>in | Pole Grade          |
|---------|-----------------|-------------------------|------------------------|-----------------------|-----------------------|--------------------------|-------------------------|----------------------|---------------------|
| L1      | 120.000-80.250  | 39.750                  | 4.000                  | 12                    | 20.5000               | 27.9730                  | 0.2500                  | 1.0000               | A572-50<br>(50 ksi) |
| L2      | 80.250-46.000   | 38.250                  | 4.750                  | 12                    | 26.7210               | 33.7800                  | 0.3125                  | 1.2500               | A572-65<br>(65 ksi) |
| L3      | 46.000-25.000   | 25.750                  | 5.083                  | 12                    | 32.2784               | 36.9710                  | 0.3750                  | 1.5000               | A572-65<br>(65 ksi) |
| L4      | 25.000-0.000    | 30.083                  |                        | 12                    | 35.2946               | 40.7890                  | 0.5000                  | 2.0000               | A572-50<br>(50 ksi) |

### Tapered Pole Properties

| Section | Tip Dia.<br>in | Area<br>in <sup>2</sup> | I<br>in <sup>4</sup> | r<br>in | C<br>in | I/C<br>in <sup>3</sup> | J<br>in <sup>4</sup> | It/Q<br>in <sup>2</sup> | w<br>in | w/t    |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|--------|
| L1      | 21.1350        | 16.3013                 | 853.2119             | 7.2495  | 10.6190 | 80.3477                | 1728.8387            | 8.0230                  | 4.8240  | 19.296 |
|         | 28.8716        | 22.3170                 | 2189.2860            | 9.9248  | 14.4900 | 151.0893               | 4436.0870            | 10.9838                 | 6.8268  | 27.307 |
| L2      | 28.3176        | 26.5736                 | 2365.5005            | 9.4542  | 13.8415 | 170.8994               | 4793.1453            | 13.0787                 | 6.3237  | 20.236 |
|         | 34.8614        | 33.6767                 | 4814.6161            | 11.9814 | 17.4980 | 275.1517               | 9755.7174            | 16.5746                 | 8.2155  | 26.29  |
| L3      | 34.1809        | 38.5233                 | 5004.7648            | 11.4214 | 16.7202 | 299.3243               | 10141.010            | 18.9600                 | 7.6456  | 20.388 |
|         | 38.1429        | 44.1897                 | 7553.9472            | 13.1014 | 19.1510 | 394.4419               | 15306.345            | 21.7488                 | 8.9032  | 23.742 |
| L4      | 37.3245        | 56.0194                 | 8656.6213            | 12.4565 | 18.2826 | 473.4892               | 17540.661            | 27.5710                 | 8.1190  | 16.238 |
|         | 42.0515        | 64.8653                 | 13439.134            | 14.4235 | 21.1287 | 636.0606               | 27231.329            | 31.9247                 | 9.5915  | 19.183 |

| Tower<br>Elevation<br>ft | Gusset<br>Area<br>(per face)<br>ft <sup>2</sup> | Gusset<br>Thickness<br>in | Gusset Grade | Adjust. Factor<br>A <sub>r</sub> | Adjust. Factor<br>A <sub>r</sub> | Weight Mult. | Double Angle<br>Stitch Bolt<br>Spacing<br>Diagonals<br>in | Double Angle<br>Stitch Bolt<br>Spacing<br>Horizontals<br>in | Double Angle<br>Stitch Bolt<br>Spacing<br>Redundants<br>in |
|--------------------------|-------------------------------------------------|---------------------------|--------------|----------------------------------|----------------------------------|--------------|-----------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|
| L1 120.000-80.250        |                                                 |                           |              | 1                                | 1                                | 1            |                                                           |                                                             |                                                            |
| L2 80.250-46.000         |                                                 |                           |              | 1                                | 1                                | 1            |                                                           |                                                             |                                                            |
| L3 46.000-25.000         |                                                 |                           |              | 1                                | 1                                | 1            |                                                           |                                                             |                                                            |
| L4 25.000-0.000          |                                                 |                           |              | 1                                | 1                                | 1            |                                                           |                                                             |                                                            |

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

| Description                     | Sector | Exclude From<br>Torque<br>Calculation | Component<br>Type    | Placement<br>ft    | Total<br>Number | Number<br>Per Row | Start/End<br>Position | Width or<br>Diameter<br>in | Perimeter<br>in | Weight<br>plf |
|---------------------------------|--------|---------------------------------------|----------------------|--------------------|-----------------|-------------------|-----------------------|----------------------------|-----------------|---------------|
| Safety Line 3/8                 | A      | No                                    | Surface Ar<br>(CaAa) | 120.000 -<br>0.000 | 1               | 1                 | 0.500<br>0.500        | 0.3750                     |                 | 0             |
| CAT5E(1/4")                     | A      | No                                    | Surface Ar<br>(CaAa) | 120.000 -<br>0.000 | 5               | 5                 | 0.250<br>0.250        | 0.2500                     |                 | 0             |
| AVA5-50( 7/8")                  | A      | No                                    | Surface Ar<br>(CaAa) | 120.000 -<br>0.000 | 1               | 1                 | 0.250<br>0.250        | 1.1020                     |                 | 0             |
| LDF7-50A(1-5/8)                 | C      | No                                    | Surface Ar<br>(CaAa) | 89.000 -<br>0.000  | 2               | 2                 | 0.500<br>0.500        | 1.9800                     |                 | 1             |
| LDF7-50A(1-5/8)                 | C      | No                                    | Surface Ar<br>(CaAa) | 89.000 -<br>0.000  | 5               | 3                 | -0.250<br>-0.250      | 1.9800                     |                 | 1             |
| *** 80' ***<br>LDF7-50A(1-5/8") | C      | No                                    | Surface Ar<br>(CaAa) | 80.000 -<br>0.000  | 6               | 3                 | -0.250<br>-0.250      | 1.9800                     |                 | 1             |

| Description                 | Sector | Exclude From Torque Calculation | Component Type    | Placement ft    | Total Number | Number Per Row | Start/End Position | Width or Diameter in | Perimeter in | Weight plf |
|-----------------------------|--------|---------------------------------|-------------------|-----------------|--------------|----------------|--------------------|----------------------|--------------|------------|
| ***<br>CU12PSM9P6XXX(1-1/2) | C      | No                              | Surface Ar (CaAa) | 111.000 - 0.000 | 1            | 1              | 0.400<br>0.400     | 1.6000               |              | 2          |

### Feed Line/Linear Appurtenances - Entered As Area

| Description                         | Face or Leg | Allow Shield | Exclude From Torque Calculation | Component Type | Placement ft    | Total Number |                              | CAAA ft <sup>2</sup> /ft | Weight plf  |
|-------------------------------------|-------------|--------------|---------------------------------|----------------|-----------------|--------------|------------------------------|--------------------------|-------------|
| ***122' ***<br>LDF1-50A(1/4)        | A           | No           | No                              | Inside Pole    | 120.000 - 0.000 | 1            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 0<br>0<br>0 |
| TYPE 2(1-7/16)                      | A           | No           | No                              | Inside Pole    | 120.000 - 0.000 | 3            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 1<br>1<br>1 |
| HCS 2.0 Part 3(1-1/2)               | C           | No           | No                              | Inside Pole    | 120.000 - 0.000 | 2            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 2<br>2<br>2 |
| *** 111' ***<br>2" Flexible Conduit | C           | No           | No                              | Inside Pole    | 111.000 - 0.000 | 1            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 0<br>0<br>0 |
| LDF1-50A(1/4")                      | C           | No           | No                              | Inside Pole    | 111.000 - 0.000 | 7            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 0<br>0<br>0 |
| LDF2-50A(3/8")                      | C           | No           | No                              | Inside Pole    | 111.000 - 0.000 | 3            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 0<br>0<br>0 |
| CR 50 540(1/2")                     | C           | No           | No                              | Inside Pole    | 111.000 - 0.000 | 3            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 0<br>0<br>0 |
| *** 89***<br>LDF7-50A(1-5/8)        | C           | No           | No                              | Inside Pole    | 89.000 - 0.000  | 1            | No Ice<br>1/2" Ice<br>1" Ice | 0.000<br>0.000<br>0.000  | 1<br>1<br>1 |

### Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | A <sub>R</sub> ft <sup>2</sup> | A <sub>F</sub> ft <sup>2</sup> | CAAA In Face ft <sup>2</sup> | CAAA Out Face ft <sup>2</sup> | Weight K |
|---------------|--------------------|------|--------------------------------|--------------------------------|------------------------------|-------------------------------|----------|
| L1            | 120.000-80.250     | A    | 0.000                          | 0.000                          | 10.840                       | 0.000                         | 0.11     |
|               |                    | B    | 0.000                          | 0.000                          | 0.000                        | 0.000                         | 0.00     |
|               |                    | C    | 0.000                          | 0.000                          | 13.583                       | 0.000                         | 0.31     |
| L2            | 80.250-46.000      | A    | 0.000                          | 0.000                          | 9.340                        | 0.000                         | 0.10     |
|               |                    | B    | 0.000                          | 0.000                          | 0.000                        | 0.000                         | 0.00     |
|               |                    | C    | 0.000                          | 0.000                          | 59.584                       | 0.000                         | 0.64     |
| L3            | 46.000-25.000      | A    | 0.000                          | 0.000                          | 5.727                        | 0.000                         | 0.06     |
|               |                    | B    | 0.000                          | 0.000                          | 0.000                        | 0.000                         | 0.00     |
|               |                    | C    | 0.000                          | 0.000                          | 36.624                       | 0.000                         | 0.39     |
| L4            | 25.000-0.000       | A    | 0.000                          | 0.000                          | 6.817                        | 0.000                         | 0.07     |
|               |                    | B    | 0.000                          | 0.000                          | 0.000                        | 0.000                         | 0.00     |
|               |                    | C    | 0.000                          | 0.000                          | 43.600                       | 0.000                         | 0.47     |

### Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower<br>Section | Tower<br>Elevation<br>ft | Face<br>or<br>Leg | Ice<br>Thickness<br>in | A <sub>R</sub><br>ft <sup>2</sup> | A <sub>F</sub><br>ft <sup>2</sup> | C <sub>AA</sub><br>In Face<br>ft <sup>2</sup> | C <sub>AA</sub><br>Out Face<br>ft <sup>2</sup> | Weight<br>K |
|------------------|--------------------------|-------------------|------------------------|-----------------------------------|-----------------------------------|-----------------------------------------------|------------------------------------------------|-------------|
| L1               | 120.000-80.250           | A                 | 1.284                  | 0.000                             | 0.000                             | 45.256                                        | 0.000                                          | 0.50        |
|                  |                          | B                 |                        | 0.000                             | 0.000                             | 0.000                                         | 0.000                                          | 0.00        |
|                  |                          | C                 |                        | 0.000                             | 0.000                             | 29.262                                        | 0.000                                          | 0.62        |
| L2               | 80.250-46.000            | A                 | 1.226                  | 0.000                             | 0.000                             | 38.994                                        | 0.000                                          | 0.43        |
|                  |                          | B                 |                        | 0.000                             | 0.000                             | 0.000                                         | 0.000                                          | 0.00        |
|                  |                          | C                 |                        | 0.000                             | 0.000                             | 114.805                                       | 0.000                                          | 1.89        |
| L3               | 46.000-25.000            | A                 | 1.158                  | 0.000                             | 0.000                             | 23.123                                        | 0.000                                          | 0.25        |
|                  |                          | B                 |                        | 0.000                             | 0.000                             | 0.000                                         | 0.000                                          | 0.00        |
|                  |                          | C                 |                        | 0.000                             | 0.000                             | 69.406                                        | 0.000                                          | 1.12        |
| L4               | 25.000-0.000             | A                 | 1.042                  | 0.000                             | 0.000                             | 26.413                                        | 0.000                                          | 0.28        |
|                  |                          | B                 |                        | 0.000                             | 0.000                             | 0.000                                         | 0.000                                          | 0.00        |
|                  |                          | C                 |                        | 0.000                             | 0.000                             | 80.998                                        | 0.000                                          | 1.28        |

### Feed Line Center of Pressure

| Section | Elevation<br>ft | CP <sub>x</sub><br>in | CP <sub>z</sub><br>in | CP <sub>x</sub><br>Ice<br>in | CP <sub>z</sub><br>Ice<br>in |
|---------|-----------------|-----------------------|-----------------------|------------------------------|------------------------------|
| L1      | 120.000-80.250  | -1.0691               | 0.1948                | -1.6980                      | -1.0256                      |
| L2      | 80.250-46.000   | 0.1976                | 4.1912                | -0.4800                      | 2.7044                       |
| L3      | 46.000-25.000   | 0.1964                | 4.3856                | -0.5079                      | 2.9442                       |
| L4      | 25.000-0.000    | 0.1906                | 4.5135                | -0.5169                      | 3.1306                       |

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

### Shielding Factor Ka

| Tower<br>Section | Feed Line<br>Record No. | Description          | Feed Line<br>Segment<br>Elev. | K <sub>a</sub><br>No Ice | K <sub>a</sub><br>Ice |
|------------------|-------------------------|----------------------|-------------------------------|--------------------------|-----------------------|
| L1               | 2                       | Safety Line 3/8      | 80.25 -<br>120.00             | 1.0000                   | 1.0000                |
| L1               | 6                       | CAT5E(1/4")          | 80.25 -<br>120.00             | 1.0000                   | 1.0000                |
| L1               | 7                       | AVA5-50( 7/8")       | 80.25 -<br>120.00             | 1.0000                   | 1.0000                |
| L1               | 17                      | LDF7-50A(1-5/8)      | 80.25 -<br>89.00              | 1.0000                   | 1.0000                |
| L1               | 18                      | LDF7-50A(1-5/8)      | 80.25 -<br>89.00              | 1.0000                   | 1.0000                |
| L1               | 23                      | CU12PSM9P6XXX(1-1/2) | 80.25 -<br>111.00             | 1.0000                   | 1.0000                |
| L2               | 2                       | Safety Line 3/8      | 46.00 -<br>80.25              | 1.0000                   | 1.0000                |
| L2               | 6                       | CAT5E(1/4")          | 46.00 -<br>80.25              | 1.0000                   | 1.0000                |
| L2               | 7                       | AVA5-50( 7/8")       | 46.00 -<br>80.25              | 1.0000                   | 1.0000                |
| L2               | 17                      | LDF7-50A(1-5/8)      | 46.00 -<br>80.25              | 1.0000                   | 1.0000                |
| L2               | 18                      | LDF7-50A(1-5/8)      | 46.00 -<br>80.25              | 1.0000                   | 1.0000                |
| L2               | 21                      | LDF7-50A(1-5/8")     | 46.00 -<br>80.00              | 1.0000                   | 1.0000                |
| L2               | 23                      | CU12PSM9P6XXX(1-1/2) | 46.00 -<br>80.25              | 1.0000                   | 1.0000                |
| L3               | 2                       | Safety Line 3/8      | 25.00 -                       | 1.0000                   | 1.0000                |

| Tower Section | Feed Line Record No. | Description          | Feed Line Segment Elev. | K <sub>a</sub> No Ice | K <sub>a</sub> Ice |
|---------------|----------------------|----------------------|-------------------------|-----------------------|--------------------|
| L3            | 6                    | CAT5E(1/4")          | 46.00<br>25.00 - 46.00  | 1.0000                | 1.0000             |
| L3            | 7                    | AVA5-50( 7/8")       | 46.00<br>25.00 - 46.00  | 1.0000                | 1.0000             |
| L3            | 17                   | LDF7-50A(1-5/8)      | 46.00<br>25.00 - 46.00  | 1.0000                | 1.0000             |
| L3            | 18                   | LDF7-50A(1-5/8)      | 46.00<br>25.00 - 46.00  | 1.0000                | 1.0000             |
| L3            | 21                   | LDF7-50A(1-5/8")     | 46.00<br>25.00 - 46.00  | 1.0000                | 1.0000             |
| L3            | 23                   | CU12PSM9P6XXX(1-1/2) | 46.00<br>25.00 - 46.00  | 1.0000                | 1.0000             |
| L4            | 2                    | Safety Line 3/8      | 0.00 - 25.00            | 1.0000                | 1.0000             |
| L4            | 6                    | CAT5E(1/4")          | 0.00 - 25.00            | 1.0000                | 1.0000             |
| L4            | 7                    | AVA5-50( 7/8")       | 0.00 - 25.00            | 1.0000                | 1.0000             |
| L4            | 17                   | LDF7-50A(1-5/8)      | 0.00 - 25.00            | 1.0000                | 1.0000             |
| L4            | 18                   | LDF7-50A(1-5/8)      | 0.00 - 25.00            | 1.0000                | 1.0000             |
| L4            | 21                   | LDF7-50A(1-5/8")     | 0.00 - 25.00            | 1.0000                | 1.0000             |
| L4            | 23                   | CU12PSM9P6XXX(1-1/2) | 0.00 - 25.00            | 1.0000                | 1.0000             |

### User Defined Loads - Seismic

| Description                                  | Elevation<br>ft | Offset<br>From<br>Centroid<br>ft | Azimuth<br>Angle<br>° | E <sub>v</sub><br>K | E <sub>hx</sub><br>K | E <sub>hz</sub><br>K | E <sub>h</sub><br>K |
|----------------------------------------------|-----------------|----------------------------------|-----------------------|---------------------|----------------------|----------------------|---------------------|
| CCISeismic Tower Section 1 - 1               | 115.125         | 0.000                            | 0.0000                | 0.11                | 0.00                 | 0.00                 | 0.25                |
| CCISeismic Tower Section 1 - 2               | 105.250         | 0.000                            | 0.0000                | 0.13                | 0.00                 | 0.00                 | 0.23                |
| CCISeismic Tower Section 1 - 3               | 95.250          | 0.000                            | 0.0000                | 0.14                | 0.00                 | 0.00                 | 0.20                |
| CCISeismic Tower Section 1 - 4               | 85.250          | 0.000                            | 0.0000                | 0.15                | 0.00                 | 0.00                 | 0.18                |
| CCISeismic Tower Section 2 - 1               | 80.125          | 0.000                            | 0.0000                | 0.16                | 0.00                 | 0.00                 | 0.16                |
| CCISeismic Tower Section 2 - 2               | 71.000          | 0.000                            | 0.0000                | 0.20                | 0.00                 | 0.00                 | 0.16                |
| CCISeismic Tower Section 2 - 3               | 61.000          | 0.000                            | 0.0000                | 0.21                | 0.00                 | 0.00                 | 0.13                |
| CCISeismic Tower Section 2 - 4               | 51.000          | 0.000                            | 0.0000                | 0.23                | 0.00                 | 0.00                 | 0.10                |
| CCISeismic Tower Section 3 - 1               | 47.875          | 0.000                            | 0.0000                | 0.15                | 0.00                 | 0.00                 | 0.06                |
| CCISeismic Tower Section 3 - 2               | 40.000          | 0.000                            | 0.0000                | 0.28                | 0.00                 | 0.00                 | 0.07                |
| CCISeismic Tower Section 3 - 3               | 30.000          | 0.000                            | 0.0000                | 0.30                | 0.00                 | 0.00                 | 0.04                |
| CCISeismic Tower Section 4 - 1               | 30.042          | 0.000                            | 0.0000                | 0.00                | 0.00                 | 0.00                 | 0.00                |
| CCISeismic Tower Section 4 - 2               | 25.000          | 0.000                            | 0.0000                | 0.40                | 0.00                 | 0.00                 | 0.04                |
| CCISeismic Tower Section 4 - 3               | 15.000          | 0.000                            | 0.0000                | 0.42                | 0.00                 | 0.00                 | 0.02                |
| CCISeismic Tower Section 4 - 4               | 5.000           | 0.000                            | 0.0000                | 0.44                | 0.00                 | 0.00                 | 0.00                |
| CCISeismic lightning rod 5/8-in x 5-ft L-Rod | 120.000         | 0.000                            | 0.0000                | 0.00                | 0.00                 | 0.00                 | 0.00                |
| CCISeismic misc Top Hat 14"x24"              | 120.000         | 0.000                            | 0.0000                | 0.02                | 0.00                 | 0.00                 | 0.05                |
| CCISeismic commscope                         | 122.000         | 0.000                            | 0.0000                | 0.03                | 0.00                 | 0.00                 | 0.06                |

| Description                | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|----------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                            | ft        | ft                         | °                | K     | K        | K        | K     |
| FFVV-65C-R3-V1_TMO         |           |                            |                  |       |          |          |       |
| CCISeismic commscope       | 122.000   | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.06  |
| FFVV-65C-R3-V1_TMO         |           |                            |                  |       |          |          |       |
| CCISeismic commscope       | 122.000   | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.06  |
| FFVV-65C-R3-V1_TMO         |           |                            |                  |       |          |          |       |
| CCISeismic nokia AEHC      | 122.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.05  |
| CCISeismic nokia AEHC      | 122.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.05  |
| CCISeismic nokia AEHC      | 122.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.05  |
| CCISeismic (2) commscope   | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CDX68T-DS-43_TMO           |           |                            |                  |       |          |          |       |
| CCISeismic commscope       | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CDX68T-DS-43_TMO           |           |                            |                  |       |          |          |       |
| CCISeismic commscope HCS   | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2.0                        |           |                            |                  |       |          |          |       |
| CCISeismic commscope HCS   | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2.0                        |           |                            |                  |       |          |          |       |
| CCISeismic nokia           | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| AHFIG_TMO                  |           |                            |                  |       |          |          |       |
| CCISeismic nokia           | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| AHFIG_TMO                  |           |                            |                  |       |          |          |       |
| CCISeismic nokia           | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| AHFIG_TMO                  |           |                            |                  |       |          |          |       |
| CCISeismic nokia AHLOA_T-  | 122.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.04  |
| MOBILE                     |           |                            |                  |       |          |          |       |
| CCISeismic nokia AHLOA_T-  | 122.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.04  |
| MOBILE                     |           |                            |                  |       |          |          |       |
| CCISeismic nokia AHLOA_T-  | 122.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.04  |
| MOBILE                     |           |                            |                  |       |          |          |       |
| CCISeismic (2) dragonwave  | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| HORIZON COMPACT PLUS       |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| telecommunications RRH-P4  |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| telecommunications RRH-P4  |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| telecommunications RRH-P4  |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| telecommunications 2.5GHZ  |           |                            |                  |       |          |          |       |
| RRH-V3                     |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| telecommunications 2.5GHZ  |           |                            |                  |       |          |          |       |
| RRH-V3                     |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| telecommunications OPTIC   |           |                            |                  |       |          |          |       |
| FIBER JUNCTION             |           |                            |                  |       |          |          |       |
| CYLINDER                   |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| telecommunications OPTIC   |           |                            |                  |       |          |          |       |
| FIBER JUNCTION             |           |                            |                  |       |          |          |       |
| CYLINDER                   |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| telecommunications POWER   |           |                            |                  |       |          |          |       |
| JUNCTION CYLINDER          |           |                            |                  |       |          |          |       |
| CCISeismic samsung         | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| telecommunications POWER   |           |                            |                  |       |          |          |       |
| JUNCTION CYLINDER          |           |                            |                  |       |          |          |       |
| CCISeismic dbspectra       | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.03  |
| DS7C06P36U-D w/ Mount      |           |                            |                  |       |          |          |       |
| Pipe                       |           |                            |                  |       |          |          |       |
| CCISeismic ceragon FIBEAIR | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| IP-20C                     |           |                            |                  |       |          |          |       |
| CCISeismic Commscope       | 122.000   | 0.000                      | 0.0000           | 0.32  | 0.00     | 0.00     | 0.78  |
| MC-CP12M-12-126            |           |                            |                  |       |          |          |       |
| CCISeismic ericsson RRUS   | 90.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| 32 B2                      |           |                            |                  |       |          |          |       |
| CCISeismic ericsson RRUS   | 90.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| 32 B2                      |           |                            |                  |       |          |          |       |
| CCISeismic ericsson RRUS   | 90.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |

| Description                                         | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|-----------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                     | ft        | ft                         | °                | K     | K        | K        | K     |
| 32 B2                                               |           |                            |                  |       |          |          |       |
| CCISeismic ericsson RRUS 32 B66A                    | 90.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic ericsson RRUS 32 B66A                    | 90.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic ericsson RRUS 32 B66A                    | 90.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic pipe 2.4" Dia. x 6-ft                    | 90.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic pipe 2.4" Dia. x 6-ft                    | 90.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic pipe 2.4" Dia. x 6-ft                    | 90.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic tower mounts Side Arm Mount [SO 901-3]   | 90.000    | 0.000                      | 0.0000           | 0.06  | 0.00     | 0.00     | 0.08  |
| CCISeismic jma wireless MX06FRO840-02 w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.03  |
| CCISeismic jma wireless MX06FRO840-02 w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.03  |
| CCISeismic jma wireless MX06FRO840-02 w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.03  |
| CCISeismic jma wireless MX10FRO840-XX w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.04  |
| CCISeismic jma wireless MX10FRO840-XX w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.04  |
| CCISeismic jma wireless MX10FRO840-XX w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.04  |
| CCISeismic vzw Sub6 Antenna w/ Mount Pipe           | 89.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic vzw Sub6 Antenna w/ Mount Pipe           | 89.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic vzw Sub6 Antenna w/ Mount Pipe           | 89.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic ericsson 4449                            | 89.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic ericsson 4449                            | 89.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic ericsson 4449                            | 89.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic (2) ericsson RADIO 4408                  | 89.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic ericsson RADIO 4408                      | 89.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic raycap RVZDC-6627-PF-48                  | 89.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic raycap RVZDC-6627-PF-48                  | 89.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic antel BXA-70040-8CF-EDIN-X w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.03  |
| CCISeismic antel BXA-70040-8CF-EDIN-X w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.03  |
| CCISeismic antel BXA-70090-8CF-EDIN-X w/ Mount Pipe | 89.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic tower mounts T-Arm Mount [TA 602-3_KCKR] | 89.000    | 0.000                      | 0.0000           | 0.21  | 0.00     | 0.00     | 0.28  |
| CCISeismic (2) andrew TMZXX-6516-R2M w/ Mount Pipe  | 80.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic (2) andrew TMZXX-6516-R2M w/ Mount Pipe  | 80.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic (2) andrew TMZXX-6516-R2M w/ Mount Pipe  | 80.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic commscope                                | 80.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.03  |

| Description                                                    | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|----------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                | ft        | ft                         | °                | K     | K        | K        | K     |
| FFHH-65C-R3 w/ Mount Pipe                                      |           |                            |                  |       |          |          |       |
| CCISeismic commscope                                           | 80.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.03  |
| FFHH-65C-R3 w/ Mount Pipe                                      |           |                            |                  |       |          |          |       |
| CCISeismic commscope                                           | 80.000    | 0.000                      | 0.0000           | 0.03  | 0.00     | 0.00     | 0.03  |
| FFHH-65C-R3 w/ Mount Pipe                                      |           |                            |                  |       |          |          |       |
| CCISeismic nokia FRIG                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic nokia FRIG                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic nokia FRIG                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic nokia FHFB                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic nokia FHFB                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic nokia FHFB                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic nokia AHLOA                                         | 80.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic nokia AHLOA                                         | 80.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic nokia AHLOA                                         | 80.000    | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.02  |
| CCISeismic commscope                                           | 80.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CBC6AE7LQ-DS-43                                                |           |                            |                  |       |          |          |       |
| CCISeismic commscope                                           | 80.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CBC6AE7LQ-DS-43                                                |           |                            |                  |       |          |          |       |
| CCISeismic commscope                                           | 80.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CBC6AE7LQ-DS-43                                                |           |                            |                  |       |          |          |       |
| CCISeismic nokia FRLB                                          | 80.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic raycap RNSDC-7771-PF-48                             | 80.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic tower mounts Platform Mount [LP 303-1]              | 80.000    | 0.000                      | 0.0000           | 0.25  | 0.00     | 0.00     | 0.27  |
| CCISeismic jma wireless MX08FRO665-21 w/ Mount Pipe            | 111.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.04  |
| CCISeismic jma wireless MX08FRO665-21 w/ Mount Pipe            | 111.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.04  |
| CCISeismic jma wireless MX08FRO665-21 w/ Mount Pipe            | 111.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.04  |
| CCISeismic fujitsu TA08025-B604                                | 111.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic fujitsu TA08025-B604                                | 111.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic fujitsu TA08025-B604                                | 111.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic fujitsu TA08025-B605                                | 111.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.03  |
| CCISeismic fujitsu TA08025-B605                                | 111.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.03  |
| CCISeismic fujitsu TA08025-B605                                | 111.000   | 0.000                      | 0.0000           | 0.02  | 0.00     | 0.00     | 0.03  |
| CCISeismic raycap RDIDC-9181-PF-48                             | 111.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic (2) tower mounts 8' x 2" Mount Pipe                 | 111.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic (2) tower mounts 8' x 2" Mount Pipe                 | 111.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic (2) tower mounts 8' x 2" Mount Pipe                 | 111.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic tower mounts Commscope MC-PK8-DSH                   | 111.000   | 0.000                      | 0.0000           | 0.35  | 0.00     | 0.00     | 0.71  |
| CCISeismic VHLP1-23                                            | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic VHLPX3-18-2WH                                       | 122.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.02  |
| CCISeismic radwin RADWIN 2000C                                 | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) radwin RADWIN 2000C                             | 122.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic misc Safety Line 3/8 From 0 to 120 (110ft to 120ft) | 115.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line 3/8 From 0 to 120 (100ft)          | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |



| Description                                                           | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|-----------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                       | ft        | ft                         | °                | K     | K        | K        | K     |
| to110ft)                                                              |           |                            |                  |       |          |          |       |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (90ft<br>to100ft)    | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (80ft to90ft)        | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (70ft to80ft)        | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (60ft to70ft)        | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (50ft to60ft)        | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (40ft to50ft)        | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (30ft to40ft)        | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (20ft to30ft)        | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (10ft to20ft)        | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic misc Safety Line<br>3/8 From 0 to 120 (0ft to10ft)         | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (110ft<br>to120ft)  | 115.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (100ft<br>to110ft)  | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (90ft<br>to100ft)   | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (80ft<br>to90ft)    | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (70ft<br>to80ft)    | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (60ft<br>to70ft)    | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (50ft<br>to60ft)    | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (40ft<br>to50ft)    | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (30ft<br>to40ft)    | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (20ft<br>to30ft)    | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (10ft<br>to20ft)    | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF1-<br>50A(1/4) From 0 to 120 (0ft<br>to10ft)     | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) belkin<br>CAT5E(1/4") From 0 to 120<br>(110ft to120ft) | 115.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) belkin<br>CAT5E(1/4") From 0 to 120<br>(100ft to110ft) | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) belkin<br>CAT5E(1/4") From 0 to 120<br>(90ft to100ft)  | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) belkin                                                 | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |

| Description                                                                                      | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|--------------------------------------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                                                  | ft        | ft                         | °                | K     | K        | K        | K     |
| CAT5E(1/4") From 0 to 120<br>(80ft to 90ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(70ft to 80ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(60ft to 70ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(50ft to 60ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(40ft to 50ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(30ft to 40ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(20ft to 30ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(10ft to 20ft)                                                      |           |                            |                  |       |          |          |       |
| CCISeismic (5) belkin                                                                            | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CAT5E(1/4") From 0 to 120<br>(0ft to 10ft)                                                       |           |                            |                  |       |          |          |       |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (110ft<br>to 120ft)                            | 115.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (100ft<br>to 110ft)                            | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (90ft<br>to 100ft)                             | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (80ft<br>to 90ft)                              | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (70ft<br>to 80ft)                              | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (60ft<br>to 70ft)                              | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (50ft<br>to 60ft)                              | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (40ft<br>to 50ft)                              | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (30ft<br>to 40ft)                              | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (20ft<br>to 30ft)                              | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (10ft<br>to 20ft)                              | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew AVA5-50(<br>7/8") From 0 to 120 (0ft<br>to 10ft)                               | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) samsung<br>telecommunications TYPE<br>2(1-7/16) From 0 to 120 (110ft<br>to 120ft) | 115.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic (3) samsung<br>telecommunications TYPE                                                | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |

| Description                                                                                                        | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|--------------------------------------------------------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                                                                    | ft        | ft                         | °                | K     | K        | K        | K     |
| 2(1-7/16) From 0 to 120 (100ft to 110ft)<br>CCISeismic (3) samsung telecommunications TYPE                         | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| 2(1-7/16) From 0 to 120 (90ft to 100ft)<br>CCISeismic (3) samsung telecommunications TYPE                          | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (80ft to 90ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (70ft to 80ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (60ft to 70ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (50ft to 60ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (40ft to 50ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (30ft to 40ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (20ft to 30ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (10ft to 20ft)<br>CCISeismic (3) samsung telecommunications TYPE                           | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| 2(1-7/16) From 0 to 120 (0ft to 10ft)<br>CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (110ft to 120ft) | 115.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (100ft to 110ft)                                          | 105.000   | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (90ft to 100ft)                                           | 95.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (80ft to 90ft)                                            | 85.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (70ft to 80ft)                                            | 75.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (60ft to 70ft)                                            | 65.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (50ft to 60ft)                                            | 55.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (40ft to 50ft)                                            | 45.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120 (30ft to 40ft)                                            | 35.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |

| Description                                                                  | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|------------------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                              | ft        | ft                         | °                | K     | K        | K        | K     |
| 120 (30ft to40ft)                                                            |           |                            |                  |       |          |          |       |
| CCISeismic (2) nokia HCS<br>2.0 Part 3(1-1/2) From 0 to<br>120 (20ft to30ft) | 25.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) nokia HCS<br>2.0 Part 3(1-1/2) From 0 to<br>120 (10ft to20ft) | 15.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) nokia HCS<br>2.0 Part 3(1-1/2) From 0 to<br>120 (0ft to10ft)  | 5.000     | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (110ft<br>to111ft)     | 110.500   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (100ft<br>to110ft)     | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (90ft<br>to100ft)      | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (80ft<br>to90ft)       | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (70ft<br>to80ft)       | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (60ft<br>to70ft)       | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (50ft<br>to60ft)       | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (40ft<br>to50ft)       | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (30ft<br>to40ft)       | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (20ft<br>to30ft)       | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (10ft<br>to20ft)       | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (0ft<br>to10ft)        | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111<br>(110ft to111ft)    | 110.500   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111<br>(100ft to110ft)    | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111 (90ft<br>to100ft)     | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111 (80ft<br>to90ft)      | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111 (70ft<br>to80ft)      | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111 (60ft<br>to70ft)      | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111 (50ft<br>to60ft)      | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-<br>50A(1/4") From 0 to 111 (0ft<br>to50ft)       | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |

| Description                                                             | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|-------------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                         | ft        | ft                         | °                | K     | K        | K        | K     |
| 50A(1/4") From 0 to 111 (40ft to 50ft)                                  |           |                            |                  |       |          |          |       |
| CCISeismic (7) andrew LDF1-50A(1/4") From 0 to 111 (30ft to 40ft)       | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-50A(1/4") From 0 to 111 (20ft to 30ft)       | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-50A(1/4") From 0 to 111 (10ft to 20ft)       | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (7) andrew LDF1-50A(1/4") From 0 to 111 (0ft to 10ft)        | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (110ft to 111ft)     | 110.500   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (100ft to 110ft)     | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (90ft to 100ft)      | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (80ft to 90ft)       | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (70ft to 80ft)       | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (60ft to 70ft)       | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (50ft to 60ft)       | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (40ft to 50ft)       | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (30ft to 40ft)       | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (20ft to 30ft)       | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (10ft to 20ft)       | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) andrew LDF2-50A(3/8") From 0 to 111 (0ft to 10ft)        | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope CR 50 540(1/2") From 0 to 111 (110ft to 111ft) | 110.500   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope CR 50 540(1/2") From 0 to 111 (100ft to 110ft) | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope CR 50 540(1/2") From 0 to 111 (90ft to 100ft)  | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope CR 50 540(1/2") From 0 to 111 (80ft to 90ft)   | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope CR 50 540(1/2") From 0 to 111 (70ft to 80ft)   | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope CR 50 540(1/2") From 0 to 111 (60ft to 70ft)   | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |

| Description                                                                | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|----------------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                            | ft        | ft                         | °                | K     | K        | K        | K     |
| CCISeismic (3) commscope<br>CR 50 540(1/2") From 0 to<br>111 (50ft to60ft) | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope<br>CR 50 540(1/2") From 0 to<br>111 (40ft to50ft) | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope<br>CR 50 540(1/2") From 0 to<br>111 (30ft to40ft) | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope<br>CR 50 540(1/2") From 0 to<br>111 (20ft to30ft) | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope<br>CR 50 540(1/2") From 0 to<br>111 (10ft to20ft) | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (3) commscope<br>CR 50 540(1/2") From 0 to<br>111 (0ft to10ft)  | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (80ft<br>to89ft)        | 84.500    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (70ft<br>to80ft)        | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (60ft<br>to70ft)        | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (50ft<br>to60ft)        | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (40ft<br>to50ft)        | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (30ft<br>to40ft)        | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (20ft<br>to30ft)        | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (10ft<br>to20ft)        | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic andrew LDF7-<br>50A(1-5/8) From 0 to 89 (0ft<br>to10ft)         | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (80ft<br>to89ft)    | 84.500    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (70ft<br>to80ft)    | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (60ft<br>to70ft)    | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (50ft<br>to60ft)    | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (40ft<br>to50ft)    | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (30ft<br>to40ft)    | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (20ft<br>to30ft)    | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (2) andrew LDF7-<br>50A(1-5/8) From 0 to 89 (10ft<br>to20ft)    | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |

| Description                                                             | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|-------------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                         | ft        | ft                         | °                | K     | K        | K        | K     |
| to20ft)                                                                 |           |                            |                  |       |          |          |       |
| CCISeismic (2) andrew LDF7-50A(1-5/8) From 0 to 89 (0ft to10ft)         | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (80ft to89ft)        | 84.500    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (70ft to80ft)        | 75.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (60ft to70ft)        | 65.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (50ft to60ft)        | 55.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (40ft to50ft)        | 45.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (30ft to40ft)        | 35.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (20ft to30ft)        | 25.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (10ft to20ft)        | 15.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (5) andrew LDF7-50A(1-5/8) From 0 to 89 (0ft to10ft)         | 5.000     | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (70ft to80ft)       | 75.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (60ft to70ft)       | 65.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.01  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (50ft to60ft)       | 55.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (40ft to50ft)       | 45.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (30ft to40ft)       | 35.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (20ft to30ft)       | 25.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (10ft to20ft)       | 15.000    | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic (6) andrew LDF7-50A(1-5/8") From 0 to 80 (0ft to10ft)        | 5.000     | 0.000                      | 0.0000           | 0.01  | 0.00     | 0.00     | 0.00  |
| CCISeismic cui<br>CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (110ft to111ft) | 110.500   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CCISeismic cui<br>CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (100ft to110ft) | 105.000   | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic cui<br>CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (90ft to100ft)  | 95.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic cui<br>CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (80ft to90ft)   | 85.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.01  |
| CCISeismic cui                                                          | 75.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |

| Description                                                           | Elevation | Offset<br>From<br>Centroid | Azimuth<br>Angle | $E_v$ | $E_{hx}$ | $E_{hz}$ | $E_h$ |
|-----------------------------------------------------------------------|-----------|----------------------------|------------------|-------|----------|----------|-------|
|                                                                       | ft        | ft                         | °                | K     | K        | K        | K     |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (70ft to80ft)<br>CCISeismic cui | 65.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (60ft to70ft)<br>CCISeismic cui | 55.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (50ft to60ft)<br>CCISeismic cui | 45.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (40ft to50ft)<br>CCISeismic cui | 35.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (30ft to40ft)<br>CCISeismic cui | 25.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (20ft to30ft)<br>CCISeismic cui | 15.000    | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (10ft to20ft)<br>CCISeismic cui | 5.000     | 0.000                      | 0.0000           | 0.00  | 0.00     | 0.00     | 0.00  |
| CU12PSM9P6XXX(1-1/2)<br>From 0 to 111 (0ft to10ft)                    |           |                            |                  |       |          |          |       |

### Discrete Tower Loads

| Description                        | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br>° | Placement<br>ft |
|------------------------------------|-------------------|----------------|-------------------------------------------------------|----------------------------|-----------------|
| 5/8-in x 5-ft L-Rod                | C                 | From Leg       | 0.000<br>0.000<br>2.500                               | 0.0000                     | 120.000         |
| Top Hat 14"x24"                    | C                 | From Leg       | 0.000<br>0.000<br>1.000                               | 0.0000                     | 120.000         |
| *** 122' ***<br>FFVV-65C-R3-V1_TMO | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| FFVV-65C-R3-V1_TMO                 | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| FFVV-65C-R3-V1_TMO                 | C                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AEHC                               | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AEHC                               | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AEHC                               | C                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| (2) CDX68T-DS-43_TMO               | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| CDX68T-DS-43_TMO                   | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |



| Description                                                              | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br>° | Placement<br>ft |
|--------------------------------------------------------------------------|-------------------|----------------|-------------------------------------------------------|----------------------------|-----------------|
| HCS 2.0                                                                  | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| HCS 2.0                                                                  | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AHFIG_TMO                                                                | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AHFIG_TMO                                                                | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AHFIG_TMO                                                                | C                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AHLOA_T-MOBILE                                                           | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AHLOA_T-MOBILE                                                           | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| AHLOA_T-MOBILE                                                           | C                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| (2) HORIZON COMPACT PLUS                                                 | C                 | From Leg       | 4.000<br>0.000<br>-3.000                              | 0.0000                     | 122.000         |
| RRH-P4                                                                   | A                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| RRH-P4                                                                   | B                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| RRH-P4                                                                   | C                 | From Leg       | 4.000<br>0.000<br>-2.000                              | 0.0000                     | 122.000         |
| 2.5GHZ RRH-V3                                                            | A                 | From Leg       | 4.000<br>0.000<br>1.000                               | 0.0000                     | 122.000         |
| 2.5GHZ RRH-V3                                                            | B                 | From Leg       | 4.000<br>0.000<br>1.000                               | 0.0000                     | 122.000         |
| OPTIC FIBER JUNCTION CYLINDER                                            | A                 | From Leg       | 4.000<br>0.000<br>1.000                               | 0.0000                     | 122.000         |
| OPTIC FIBER JUNCTION CYLINDER                                            | B                 | From Leg       | 4.000<br>0.000<br>1.000                               | 0.0000                     | 122.000         |
| POWER JUNCTION CYLINDER                                                  | A                 | From Leg       | 4.000<br>0.000<br>1.000                               | 0.0000                     | 122.000         |
| POWER JUNCTION CYLINDER                                                  | B                 | From Leg       | 4.000<br>0.000<br>1.000                               | 0.0000                     | 122.000         |
| DS7C06P36U-D w/ Mount Pipe                                               | B                 | From Leg       | 4.000<br>0.000<br>4.000                               | 0.0000                     | 122.000         |
| FIBEAIR IP-20C                                                           | B                 | From Leg       | 4.000<br>0.000<br>0.000                               | 0.0000                     | 122.000         |
| Commscope MC-CP12M-12-126<br>*** 117' ***<br>*** 111' ***<br>*** 90' *** | C                 | None           |                                                       | 0.0000                     | 122.000         |
| RRUS 32 B2                                                               | B                 | From Face      | 2.000                                                 | 0.0000                     | 90.000          |

| Description                              | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br><br>° | Placement<br><br>ft |
|------------------------------------------|-------------------|----------------|-------------------------------------------------------|--------------------------------|---------------------|
|                                          |                   |                | 0.000                                                 |                                |                     |
| RRUS 32 B2                               | C                 | From Face      | 1.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| RRUS 32 B2                               | A                 | From Face      | 1.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| RRUS 32 B66A                             | B                 | From Face      | 1.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| RRUS 32 B66A                             | C                 | From Face      | 1.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| RRUS 32 B66A                             | A                 | From Face      | 1.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| 2.4" Dia. x 6-ft                         | A                 | From Face      | 1.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| 2.4" Dia. x 6-ft                         | B                 | From Face      | 0.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| 2.4" Dia. x 6-ft                         | C                 | From Face      | 0.000                                                 |                                |                     |
|                                          |                   |                | 2.000                                                 | 0.0000                         | 90.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| Side Arm Mount [SO 901-3]<br>*** 8g' *** | C                 | None           | 0.000                                                 | 0.0000                         | 90.000              |
| MX06FRO840-02 w/ Mount Pipe              | A                 | From Leg       | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| MX06FRO840-02 w/ Mount Pipe              | B                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| MX06FRO840-02 w/ Mount Pipe              | C                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| MX10FRO840-XX w/ Mount Pipe              | A                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| MX10FRO840-XX w/ Mount Pipe              | B                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| MX10FRO840-XX w/ Mount Pipe              | C                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| Sub6 Antenna w/ Mount Pipe               | A                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| Sub6 Antenna w/ Mount Pipe               | B                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| Sub6 Antenna w/ Mount Pipe               | C                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| 4449                                     | A                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| 4449                                     | B                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| 4449                                     | C                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                          |                   |                | 0.000                                                 |                                |                     |
| (2) RADIO 4408                           | B                 | From Leg       | 2.000                                                 |                                |                     |
|                                          |                   |                | 4.000                                                 | 0.0000                         | 89.000              |

| Description                                | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br><br>° | Placement<br><br>ft |
|--------------------------------------------|-------------------|----------------|-------------------------------------------------------|--------------------------------|---------------------|
|                                            |                   |                | 0.000                                                 |                                |                     |
| RADIO 4408                                 | C                 | From Leg       | 2.000                                                 |                                |                     |
|                                            |                   |                | 4.000                                                 | 0.0000                         | 89.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 2.000                                                 |                                |                     |
| RVZDC-6627-PF-48                           | B                 | From Leg       | 4.000                                                 | 0.0000                         | 89.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 2.000                                                 |                                |                     |
| RVZDC-6627-PF-48                           | C                 | From Leg       | 4.000                                                 | 0.0000                         | 89.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 2.000                                                 |                                |                     |
| BXA-70040-8CF-EDIN-X w/ Mount Pipe         | A                 | From Leg       | 4.000                                                 | 0.0000                         | 89.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 2.000                                                 |                                |                     |
| BXA-70040-8CF-EDIN-X w/ Mount Pipe         | C                 | From Leg       | 4.000                                                 | 0.0000                         | 89.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 2.000                                                 |                                |                     |
| BXA-70090-8CF-EDIN-X w/ Mount Pipe         | B                 | From Leg       | 4.000                                                 | 0.0000                         | 89.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 2.000                                                 |                                |                     |
| T-Arm Mount [TA 602-3_KCKR]<br>*** 80' *** | C                 | None           |                                                       | 0.0000                         | 89.000              |
| (2) TMZXX-6516-R2M w/ Mount Pipe           | A                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 0.000                                                 |                                |                     |
| (2) TMZXX-6516-R2M w/ Mount Pipe           | B                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 0.000                                                 |                                |                     |
| (2) TMZXX-6516-R2M w/ Mount Pipe           | C                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 0.000                                                 |                                |                     |
| FFHH-65C-R3 w/ Mount Pipe                  | A                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| FFHH-65C-R3 w/ Mount Pipe                  | B                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| FFHH-65C-R3 w/ Mount Pipe                  | C                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| FRIG                                       | A                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 0.000                                                 |                                |                     |
| FRIG                                       | B                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 0.000                                                 |                                |                     |
| FRIG                                       | C                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | 0.000                                                 |                                |                     |
| FHFB                                       | A                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| FHFB                                       | B                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| FHFB                                       | C                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| AHLOA                                      | A                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| AHLOA                                      | B                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |
|                                            |                   |                | 0.000                                                 |                                |                     |
|                                            |                   |                | -2.000                                                |                                |                     |
| AHLOA                                      | C                 | From Leg       | 4.000                                                 | 0.0000                         | 80.000              |

| Description                 | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br><br>° | Placement<br><br>ft |
|-----------------------------|-------------------|----------------|-------------------------------------------------------|--------------------------------|---------------------|
|                             |                   |                | 0.000                                                 |                                |                     |
| CBC6AE7LQ-DS-43             | A                 | From Leg       | -2.000                                                | 0.0000                         | 80.000              |
|                             |                   |                | 4.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| CBC6AE7LQ-DS-43             | B                 | From Leg       | -2.000                                                | 0.0000                         | 80.000              |
|                             |                   |                | 4.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| CBC6AE7LQ-DS-43             | C                 | From Leg       | -2.000                                                | 0.0000                         | 80.000              |
|                             |                   |                | 4.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| FRLB                        | C                 | From Leg       | -2.000                                                | 0.0000                         | 80.000              |
|                             |                   |                | 4.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| RNSDC-7771-PF-48            | C                 | From Leg       | -2.000                                                | 0.0000                         | 80.000              |
|                             |                   |                | 4.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| Platform Mount [LP 303-1]   | C                 | None           | 0.000                                                 | 0.0000                         | 80.000              |
| ***                         |                   |                |                                                       |                                |                     |
| ***                         |                   |                |                                                       |                                |                     |
| MX08FRO665-21 w/ Mount Pipe | A                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| MX08FRO665-21 w/ Mount Pipe | B                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| MX08FRO665-21 w/ Mount Pipe | C                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| TA08025-B604                | A                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| TA08025-B604                | B                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| TA08025-B604                | C                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| TA08025-B605                | A                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| TA08025-B605                | B                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| TA08025-B605                | C                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| RDIDC-9181-PF-48            | A                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| (2) 8' x 2" Mount Pipe      | A                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| (2) 8' x 2" Mount Pipe      | B                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| (2) 8' x 2" Mount Pipe      | C                 | From Leg       | 4.000                                                 | 0.0000                         | 111.000             |
|                             |                   |                | 0.000                                                 |                                |                     |
|                             |                   |                | 0.000                                                 |                                |                     |
| Commscope MC-PK8-DSH        | C                 | None           |                                                       | 0.0000                         | 111.000             |

## Dishes

| Description      | Face<br>or<br>Leg | Dish<br>Type             | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft | Azimuth<br>Adjustment<br>° | 3 dB<br>Beam<br>Width<br>° | Elevation<br>ft | Outside<br>Diameter<br>ft |
|------------------|-------------------|--------------------------|----------------|-------------------------------------------|----------------------------|----------------------------|-----------------|---------------------------|
| VHLP1-23         | C                 | Paraboloid w/Shroud (HP) | From<br>Leg    | 4.000<br>0.000<br>-3.000                  | -20.0000                   |                            | 122.000         | 1.275                     |
| VHLPX3-18-2WH    | A                 | Paraboloid w/Shroud (HP) | From<br>Leg    | 4.000<br>0.000<br>0.000                   | -90.0000                   |                            | 122.000         | 3.283                     |
| ***              |                   |                          |                |                                           |                            |                            |                 |                           |
| ***              |                   |                          |                |                                           |                            |                            |                 |                           |
| ***              |                   |                          |                |                                           |                            |                            |                 |                           |
| ***              |                   |                          |                |                                           |                            |                            |                 |                           |
| RADWIN 2000C     | A                 | Paraboloid w/o Radome    | From<br>Leg    | 4.000<br>0.000<br>2.000                   | 0.0000                     |                            | 122.000         | 1.218                     |
| (2) RADWIN 2000C | C                 | Paraboloid w/o Radome    | From<br>Leg    | 4.000<br>0.000<br>2.000                   | 0.0000                     |                            | 122.000         | 1.218                     |

## Load Combinations

| Comb.<br>No. | Description                                |
|--------------|--------------------------------------------|
| 1            | Dead Only                                  |
| 2            | 1.2 Dead+1.0 Wind 0 deg - No Ice           |
| 3            | 0.9 Dead+1.0 Wind 0 deg - No Ice           |
| 4            | 1.2 Dead+1.0 Wind 30 deg - No Ice          |
| 5            | 0.9 Dead+1.0 Wind 30 deg - No Ice          |
| 6            | 1.2 Dead+1.0 Wind 60 deg - No Ice          |
| 7            | 0.9 Dead+1.0 Wind 60 deg - No Ice          |
| 8            | 1.2 Dead+1.0 Wind 90 deg - No Ice          |
| 9            | 0.9 Dead+1.0 Wind 90 deg - No Ice          |
| 10           | 1.2 Dead+1.0 Wind 120 deg - No Ice         |
| 11           | 0.9 Dead+1.0 Wind 120 deg - No Ice         |
| 12           | 1.2 Dead+1.0 Wind 150 deg - No Ice         |
| 13           | 0.9 Dead+1.0 Wind 150 deg - No Ice         |
| 14           | 1.2 Dead+1.0 Wind 180 deg - No Ice         |
| 15           | 0.9 Dead+1.0 Wind 180 deg - No Ice         |
| 16           | 1.2 Dead+1.0 Wind 210 deg - No Ice         |
| 17           | 0.9 Dead+1.0 Wind 210 deg - No Ice         |
| 18           | 1.2 Dead+1.0 Wind 240 deg - No Ice         |
| 19           | 0.9 Dead+1.0 Wind 240 deg - No Ice         |
| 20           | 1.2 Dead+1.0 Wind 270 deg - No Ice         |
| 21           | 0.9 Dead+1.0 Wind 270 deg - No Ice         |
| 22           | 1.2 Dead+1.0 Wind 300 deg - No Ice         |
| 23           | 0.9 Dead+1.0 Wind 300 deg - No Ice         |
| 24           | 1.2 Dead+1.0 Wind 330 deg - No Ice         |
| 25           | 0.9 Dead+1.0 Wind 330 deg - No Ice         |
| 26           | 1.2 Dead+1.0 Ice+1.0 Temp                  |
| 27           | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp   |
| 28           | 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp  |
| 29           | 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp  |
| 30           | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp  |
| 31           | 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp |
| 32           | 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp |
| 33           | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |
| 34           | 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp |
| 35           | 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp |
| 36           | 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp |
| 37           | 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp |
| 38           | 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp |

| Comb. No. | Description                    |
|-----------|--------------------------------|
| 39        | Dead+Wind 0 deg - Service      |
| 40        | Dead+Wind 30 deg - Service     |
| 41        | Dead+Wind 60 deg - Service     |
| 42        | Dead+Wind 90 deg - Service     |
| 43        | Dead+Wind 120 deg - Service    |
| 44        | Dead+Wind 150 deg - Service    |
| 45        | Dead+Wind 180 deg - Service    |
| 46        | Dead+Wind 210 deg - Service    |
| 47        | Dead+Wind 240 deg - Service    |
| 48        | Dead+Wind 270 deg - Service    |
| 49        | Dead+Wind 300 deg - Service    |
| 50        | Dead+Wind 330 deg - Service    |
| 51        | 1.2 Dead+1.0 Ev+1.0 Eh 0 deg   |
| 52        | 0.9 Dead-1.0 Ev+1.0 Eh 0 deg   |
| 53        | 1.2 Dead+1.0 Ev+1.0 Eh 30 deg  |
| 54        | 0.9 Dead-1.0 Ev+1.0 Eh 30 deg  |
| 55        | 1.2 Dead+1.0 Ev+1.0 Eh 60 deg  |
| 56        | 0.9 Dead-1.0 Ev+1.0 Eh 60 deg  |
| 57        | 1.2 Dead+1.0 Ev+1.0 Eh 90 deg  |
| 58        | 0.9 Dead-1.0 Ev+1.0 Eh 90 deg  |
| 59        | 1.2 Dead+1.0 Ev+1.0 Eh 120 deg |
| 60        | 0.9 Dead-1.0 Ev+1.0 Eh 120 deg |
| 61        | 1.2 Dead+1.0 Ev+1.0 Eh 150 deg |
| 62        | 0.9 Dead-1.0 Ev+1.0 Eh 150 deg |
| 63        | 1.2 Dead+1.0 Ev+1.0 Eh 180 deg |
| 64        | 0.9 Dead-1.0 Ev+1.0 Eh 180 deg |
| 65        | 1.2 Dead+1.0 Ev+1.0 Eh 210 deg |
| 66        | 0.9 Dead-1.0 Ev+1.0 Eh 210 deg |
| 67        | 1.2 Dead+1.0 Ev+1.0 Eh 240 deg |
| 68        | 0.9 Dead-1.0 Ev+1.0 Eh 240 deg |
| 69        | 1.2 Dead+1.0 Ev+1.0 Eh 270 deg |
| 70        | 0.9 Dead-1.0 Ev+1.0 Eh 270 deg |
| 71        | 1.2 Dead+1.0 Ev+1.0 Eh 300 deg |
| 72        | 0.9 Dead-1.0 Ev+1.0 Eh 300 deg |
| 73        | 1.2 Dead+1.0 Ev+1.0 Eh 330 deg |
| 74        | 0.9 Dead-1.0 Ev+1.0 Eh 330 deg |

### Maximum Member Forces

| Section No. | Elevation ft | Component Type | Condition        | Gov. Load Comb. | Axial K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|-------------|--------------|----------------|------------------|-----------------|---------|--------------------------|--------------------------|
| L1          | 120 - 80.25  | Pole           | Max Tension      | 1               | 0.00    | 0.00                     | 0.00                     |
|             |              |                | Max. Compression | 26              | -28.81  | -0.15                    | 0.26                     |
|             |              |                | Max. Mx          | 8               | -13.59  | -324.12                  | 4.39                     |
|             |              |                | Max. My          | 2               | -13.60  | -4.96                    | 318.48                   |
|             |              |                | Max. Vy          | 8               | 15.38   | -324.12                  | 4.39                     |
|             |              |                | Max. Vx          | 2               | -15.34  | -4.96                    | 318.48                   |
|             |              |                | Max. Torque      | 10              |         |                          | 2.36                     |
| L2          | 80.25 - 46   | Pole           | Max Tension      | 1               | 0.00    | 0.00                     | 0.00                     |
|             |              |                | Max. Compression | 26              | -44.18  | 1.26                     | -2.45                    |
|             |              |                | Max. Mx          | 8               | -22.36  | -964.76                  | 12.95                    |
|             |              |                | Max. My          | 14              | -22.37  | 11.57                    | -956.12                  |
|             |              |                | Max. Vy          | 8               | 20.77   | -964.76                  | 12.95                    |
|             |              |                | Max. Vx          | 2               | -20.69  | -14.09                   | 956.11                   |
|             |              |                | Max. Torque      | 10              |         |                          | 1.93                     |
| L3          | 46 - 25      | Pole           | Max Tension      | 1               | 0.00    | 0.00                     | 0.00                     |
|             |              |                | Max. Compression | 26              | -51.03  | 1.55                     | -3.98                    |
|             |              |                | Max. Mx          | 8               | -27.33  | -1408.99                 | 18.31                    |
|             |              |                | Max. My          | 14              | -27.33  | 16.76                    | -1398.71                 |
|             |              |                | Max. Vy          | 8               | 22.17   | -1408.99                 | 18.31                    |
|             |              |                | Max. Vx          | 2               | -22.09  | -19.99                   | 1398.22                  |
|             |              |                | Max. Torque      | 10              |         |                          | 1.68                     |
| L4          | 25 - 0       | Pole           | Max Tension      | 1               | 0.00    | 0.00                     | 0.00                     |
|             |              |                | Max. Compression | 26              | -63.21  | 1.95                     | -6.25                    |
|             |              |                | Max. Mx          | 8               | -36.92  | -2103.35                 | 25.86                    |
|             |              |                | Max. My          | 14              | -36.92  | 24.17                    | -2090.84                 |

| Section No. | Elevation ft | Component Type | Condition   | Gov. Load Comb. | Axial K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|-------------|--------------|----------------|-------------|-----------------|---------|--------------------------|--------------------------|
|             |              |                | Max. Vy     | 6               | 24.65   | -1999.84                 | 1151.42                  |
|             |              |                | Max. Vx     | 2               | -23.83  | -28.38                   | 2089.51                  |
|             |              |                | Max. Torque | 10              |         |                          | 1.67                     |

### Maximum Reactions

| Location | Condition           | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|----------|---------------------|-----------------|------------|-----------------|-----------------|
| Pole     | Max. Vert           | 26              | 63.21      | 0.00            | -0.00           |
|          | Max. H <sub>x</sub> | 18              | 36.93      | 24.50           | -14.26          |
|          | Max. H <sub>z</sub> | 3               | 27.70      | -0.28           | 23.81           |
|          | Max. M <sub>x</sub> | 2               | 2089.51    | -0.28           | 23.81           |
|          | Max. M <sub>z</sub> | 8               | 2103.35    | -23.88          | 0.27            |
|          | Max. Torsion        | 10              | 1.67       | -20.66          | -11.66          |
|          | Min. Vert           | 54              | 21.48      | -3.08           | 5.33            |
|          | Min. H <sub>x</sub> | 6               | 36.93      | -24.64          | 14.25           |
|          | Min. H <sub>z</sub> | 14              | 36.93      | 0.24            | -23.78          |
|          | Min. M <sub>x</sub> | 14              | -2090.84   | 0.24            | -23.78          |
|          | Min. M <sub>z</sub> | 20              | -2087.66   | 23.76           | -0.20           |
|          | Min. Torsion        | 24              | -1.13      | 11.77           | 20.44           |

### Tower Mast Reaction Summary

| Load Combination                   | Vertical K | Shear <sub>x</sub> K | Shear <sub>z</sub> K | Overturing Moment, M <sub>x</sub> kip-ft | Overturing Moment, M <sub>z</sub> kip-ft | Torque kip-ft |
|------------------------------------|------------|----------------------|----------------------|------------------------------------------|------------------------------------------|---------------|
| Dead Only                          | 30.78      | 0.00                 | 0.00                 | 1.77                                     | 0.21                                     | 0.00          |
| 1.2 Dead+1.0 Wind 0 deg - No Ice   | 36.93      | 0.28                 | -23.81               | -2089.51                                 | -28.38                                   | 0.65          |
| 0.9 Dead+1.0 Wind 0 deg - No Ice   | 27.70      | 0.28                 | -23.81               | -2066.90                                 | -28.12                                   | 0.64          |
| 1.2 Dead+1.0 Wind 30 deg - No Ice  | 36.93      | 12.27                | -20.63               | -1807.77                                 | -1088.25                                 | -0.58         |
| 0.9 Dead+1.0 Wind 30 deg - No Ice  | 27.70      | 12.27                | -20.63               | -1788.31                                 | -1076.18                                 | -0.58         |
| 1.2 Dead+1.0 Wind 60 deg - No Ice  | 36.93      | 24.64                | -14.25               | -1151.42                                 | -1999.84                                 | 1.03          |
| 0.9 Dead+1.0 Wind 60 deg - No Ice  | 27.70      | 24.64                | -14.25               | -1139.66                                 | -1978.45                                 | 1.03          |
| 1.2 Dead+1.0 Wind 90 deg - No Ice  | 36.93      | 23.88                | -0.27                | -25.86                                   | -2103.35                                 | -1.46         |
| 0.9 Dead+1.0 Wind 90 deg - No Ice  | 27.70      | 23.88                | -0.27                | -26.10                                   | -2080.06                                 | -1.45         |
| 1.2 Dead+1.0 Wind 120 deg - No Ice | 36.93      | 20.66                | 11.66                | 1023.15                                  | -1822.00                                 | -1.67         |
| 0.9 Dead+1.0 Wind 120 deg - No Ice | 27.70      | 20.66                | 11.66                | 1011.28                                  | -1801.81                                 | -1.66         |
| 1.2 Dead+1.0 Wind 150 deg - No Ice | 36.93      | 11.83                | 20.45                | 1795.52                                  | -1042.40                                 | -1.56         |
| 0.9 Dead+1.0 Wind 150 deg - No Ice | 27.70      | 11.83                | 20.45                | 1775.10                                  | -1030.87                                 | -1.55         |
| 1.2 Dead+1.0 Wind 180 deg - No Ice | 36.93      | -0.24                | 23.78                | 2090.84                                  | 24.17                                    | -0.22         |
| 0.9 Dead+1.0 Wind 180 deg - No Ice | 27.70      | -0.24                | 23.78                | 2067.15                                  | 23.83                                    | -0.21         |
| 1.2 Dead+1.0 Wind 210 deg - No Ice | 36.93      | -12.09               | 20.68                | 1818.05                                  | 1065.56                                  | 0.46          |
| 0.9 Dead+1.0 Wind 210 deg - No Ice | 27.70      | -12.09               | 20.68                | 1797.37                                  | 1053.68                                  | 0.47          |
| 1.2 Dead+1.0 Wind 240 deg          | 36.93      | -24.50               | 14.26                | 1156.29                                  | 1982.66                                  | -1.34         |

| Load<br>Combination         | Vertical<br>K | Shear <sub>x</sub><br>K | Shear <sub>z</sub><br>K | Overturning<br>Moment, M <sub>x</sub><br>kip-ft | Overturning<br>Moment, M <sub>z</sub><br>kip-ft | Torque<br>kip-ft |
|-----------------------------|---------------|-------------------------|-------------------------|-------------------------------------------------|-------------------------------------------------|------------------|
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead+1.0 Wind 240 deg   | 27.70         | -24.50                  | 14.26                   | 1143.38                                         | 1961.38                                         | -1.34            |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 270 deg   | 36.93         | -23.76                  | 0.20                    | 20.42                                           | 2087.66                                         | 0.87             |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead+1.0 Wind 270 deg   | 27.70         | -23.76                  | 0.20                    | 19.66                                           | 2064.47                                         | 0.87             |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 300 deg   | 36.93         | -20.51                  | -11.66                  | -1018.23                                        | 1803.19                                         | 1.07             |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead+1.0 Wind 300 deg   | 27.70         | -20.51                  | -11.66                  | -1007.51                                        | 1783.12                                         | 1.06             |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 330 deg   | 36.93         | -11.77                  | -20.44                  | -1789.77                                        | 1035.26                                         | 1.13             |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead+1.0 Wind 330 deg   | 27.70         | -11.77                  | -20.44                  | -1770.51                                        | 1023.69                                         | 1.12             |
| - No Ice                    |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ice+1.0 Temp   | 63.21         | -0.00                   | 0.00                    | 6.25                                            | 1.95                                            | -0.00            |
| 1.2 Dead+1.0 Wind 0         | 63.21         | 0.03                    | -2.84                   | -260.72                                         | -1.00                                           | 0.13             |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 30        | 63.21         | 1.46                    | -2.46                   | -224.69                                         | -135.88                                         | 0.02             |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 60        | 63.21         | 2.78                    | -1.61                   | -136.25                                         | -245.43                                         | 0.07             |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 90        | 63.21         | 2.85                    | -0.03                   | 3.53                                            | -266.41                                         | -0.11            |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 120       | 63.21         | 2.47                    | 1.40                    | 137.44                                          | -230.63                                         | -0.16            |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 150       | 63.21         | 1.41                    | 2.45                    | 235.83                                          | -131.25                                         | -0.19            |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 180       | 63.21         | -0.02                   | 2.84                    | 273.10                                          | 4.25                                            | -0.09            |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 210       | 63.21         | -1.44                   | 2.47                    | 238.05                                          | 137.32                                          | -0.03            |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 240       | 63.21         | -2.77                   | 1.61                    | 149.07                                          | 247.52                                          | -0.10            |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 270       | 63.21         | -2.84                   | 0.02                    | 8.05                                            | 268.67                                          | 0.05             |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 300       | 63.21         | -2.45                   | -1.40                   | -124.70                                         | 232.53                                          | 0.11             |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Wind 330       | 63.21         | -1.41                   | -2.44                   | -222.90                                         | 134.49                                          | 0.15             |
| deg+1.0 Ice+1.0 Temp        |               |                         |                         |                                                 |                                                 |                  |
| Dead+Wind 0 deg - Service   | 30.78         | 0.08                    | -7.09                   | -617.08                                         | -8.26                                           | 0.19             |
| Dead+Wind 30 deg - Service  | 30.78         | 3.65                    | -6.14                   | -533.73                                         | -321.85                                         | -0.18            |
| Dead+Wind 60 deg - Service  | 30.78         | 7.34                    | -4.25                   | -339.62                                         | -591.76                                         | 0.30             |
| Dead+Wind 90 deg - Service  | 30.78         | 7.11                    | -0.08                   | -6.48                                           | -622.21                                         | -0.44            |
| Dead+Wind 120 deg - Service | 30.78         | 6.15                    | 3.47                    | 303.91                                          | -538.95                                         | -0.49            |
| Dead+Wind 150 deg - Service | 30.78         | 3.52                    | 6.09                    | 532.44                                          | -308.28                                         | -0.46            |
| Dead+Wind 180 deg - Service | 30.78         | -0.07                   | 7.08                    | 619.83                                          | 7.29                                            | -0.06            |
| Dead+Wind 210 deg - Service | 30.78         | -3.60                   | 6.16                    | 539.11                                          | 315.42                                          | 0.14             |
| Dead+Wind 240 deg - Service | 30.78         | -7.30                   | 4.25                    | 343.41                                          | 586.96                                          | -0.40            |
| Dead+Wind 270 deg - Service | 30.78         | -7.07                   | 0.06                    | 7.22                                            | 617.85                                          | 0.26             |
| Dead+Wind 300 deg - Service | 30.78         | -6.11                   | -3.47                   | -300.10                                         | 533.66                                          | 0.32             |
| Dead+Wind 330 deg - Service | 30.78         | -3.50                   | -6.09                   | -528.38                                         | 306.44                                          | 0.34             |
| 1.2 Dead+1.0 Ev+1.0 Eh 0    | 43.15         | 0.00                    | -6.15                   | -637.15                                         | 0.26                                            | 0.01             |
| deg                         |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 0    | 21.48         | 0.00                    | -6.15                   | -620.10                                         | 0.19                                            | 0.01             |
| deg                         |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 30   | 43.15         | 3.08                    | -5.33                   | -551.49                                         | -319.42                                         | 0.01             |
| deg                         |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 30   | 21.48         | 3.08                    | -5.33                   | -536.80                                         | -310.67                                         | 0.01             |
| deg                         |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 60   | 43.15         | 5.33                    | -3.08                   | -317.46                                         | -553.45                                         | -0.00            |



| Load<br>Combination        | Vertical<br>K | Shear <sub>x</sub><br>K | Shear <sub>z</sub><br>K | Overturning<br>Moment, M <sub>x</sub><br>kip-ft | Overturning<br>Moment, M <sub>z</sub><br>kip-ft | Torque<br>kip-ft |
|----------------------------|---------------|-------------------------|-------------------------|-------------------------------------------------|-------------------------------------------------|------------------|
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 60  | 21.48         | 5.33                    | -3.08                   | -309.24                                         | -538.24                                         | -0.00            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 90  | 43.15         | 6.15                    | 0.00                    | 2.22                                            | -639.11                                         | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 90  | 21.48         | 6.15                    | 0.00                    | 1.63                                            | -621.54                                         | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 120 | 43.15         | 5.33                    | 3.08                    | 321.91                                          | -553.45                                         | -0.02            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 120 | 21.48         | 5.33                    | 3.08                    | 312.49                                          | -538.24                                         | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 150 | 43.15         | 3.08                    | 5.33                    | 555.93                                          | -319.42                                         | -0.02            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 150 | 21.48         | 3.08                    | 5.33                    | 540.06                                          | -310.67                                         | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 180 | 43.15         | 0.00                    | 6.15                    | 641.59                                          | 0.26                                            | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 180 | 21.48         | 0.00                    | 6.15                    | 623.36                                          | 0.19                                            | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 210 | 43.15         | -3.08                   | 5.33                    | 555.93                                          | 319.95                                          | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 210 | 21.48         | -3.08                   | 5.33                    | 540.06                                          | 311.06                                          | -0.01            |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 240 | 43.15         | -5.33                   | 3.08                    | 321.91                                          | 553.97                                          | 0.00             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 240 | 21.48         | -5.33                   | 3.08                    | 312.49                                          | 538.63                                          | 0.00             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 270 | 43.15         | -6.15                   | 0.00                    | 2.22                                            | 639.63                                          | 0.01             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 270 | 21.48         | -6.15                   | 0.00                    | 1.63                                            | 621.92                                          | 0.01             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 300 | 43.15         | -5.33                   | -3.08                   | -317.46                                         | 553.98                                          | 0.02             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 300 | 21.48         | -5.33                   | -3.08                   | -309.24                                         | 538.63                                          | 0.01             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 1.2 Dead+1.0 Ev+1.0 Eh 330 | 43.15         | -3.08                   | -5.33                   | -551.49                                         | 319.95                                          | 0.02             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |
| 0.9 Dead-1.0 Ev+1.0 Eh 330 | 21.48         | -3.08                   | -5.33                   | -536.80                                         | 311.06                                          | 0.01             |
| deg                        |               |                         |                         |                                                 |                                                 |                  |

## Solution Summary

| Load<br>Comb. | Sum of Applied Forces |         |         | Sum of Reactions |         |         | % Error |
|---------------|-----------------------|---------|---------|------------------|---------|---------|---------|
|               | PX<br>K               | PY<br>K | PZ<br>K | PX<br>K          | PY<br>K | PZ<br>K |         |
| 1             | 0.00                  | -30.78  | 0.00    | 0.00             | 30.78   | 0.00    | 0.000%  |
| 2             | 0.28                  | -36.93  | -23.81  | -0.28            | 36.93   | 23.81   | 0.000%  |
| 3             | 0.28                  | -27.70  | -23.81  | -0.28            | 27.70   | 23.81   | 0.000%  |
| 4             | 12.27                 | -36.93  | -20.63  | -12.27           | 36.93   | 20.63   | 0.000%  |
| 5             | 12.27                 | -27.70  | -20.63  | -12.27           | 27.70   | 20.63   | 0.000%  |
| 6             | 24.64                 | -36.93  | -14.25  | -24.64           | 36.93   | 14.25   | 0.000%  |
| 7             | 24.64                 | -27.70  | -14.25  | -24.64           | 27.70   | 14.25   | 0.000%  |
| 8             | 23.88                 | -36.93  | -0.27   | -23.88           | 36.93   | 0.27    | 0.000%  |
| 9             | 23.88                 | -27.70  | -0.27   | -23.88           | 27.70   | 0.27    | 0.000%  |
| 10            | 20.66                 | -36.93  | 11.66   | -20.66           | 36.93   | -11.66  | 0.000%  |
| 11            | 20.66                 | -27.70  | 11.66   | -20.66           | 27.70   | -11.66  | 0.000%  |
| 12            | 11.83                 | -36.93  | 20.45   | -11.83           | 36.93   | -20.45  | 0.000%  |
| 13            | 11.83                 | -27.70  | 20.45   | -11.83           | 27.70   | -20.45  | 0.000%  |
| 14            | -0.24                 | -36.93  | 23.78   | 0.24             | 36.93   | -23.78  | 0.000%  |
| 15            | -0.24                 | -27.70  | 23.78   | 0.24             | 27.70   | -23.78  | 0.000%  |
| 16            | -12.09                | -36.93  | 20.68   | 12.09            | 36.93   | -20.68  | 0.000%  |
| 17            | -12.09                | -27.70  | 20.68   | 12.09            | 27.70   | -20.68  | 0.000%  |
| 18            | -24.50                | -36.93  | 14.26   | 24.50            | 36.93   | -14.26  | 0.000%  |
| 19            | -24.50                | -27.70  | 14.26   | 24.50            | 27.70   | -14.26  | 0.000%  |
| 20            | -23.76                | -36.93  | 0.20    | 23.76            | 36.93   | -0.20   | 0.000%  |
| 21            | -23.76                | -27.70  | 0.20    | 23.76            | 27.70   | -0.20   | 0.000%  |

| Load Comb. | Sum of Applied Forces |         |         | Sum of Reactions |         |         | % Error |
|------------|-----------------------|---------|---------|------------------|---------|---------|---------|
|            | PX<br>K               | PY<br>K | PZ<br>K | PX<br>K          | PY<br>K | PZ<br>K |         |
| 22         | -20.51                | -36.93  | -11.66  | 20.51            | 36.93   | 11.66   | 0.000%  |
| 23         | -20.51                | -27.70  | -11.66  | 20.51            | 27.70   | 11.66   | 0.000%  |
| 24         | -11.77                | -36.93  | -20.44  | 11.77            | 36.93   | 20.44   | 0.000%  |
| 25         | -11.77                | -27.70  | -20.44  | 11.77            | 27.70   | 20.44   | 0.000%  |
| 26         | 0.00                  | -63.21  | 0.00    | 0.00             | 63.21   | -0.00   | 0.000%  |
| 27         | 0.03                  | -63.21  | -2.84   | -0.03            | 63.21   | 2.84    | 0.000%  |
| 28         | 1.46                  | -63.21  | -2.46   | -1.46            | 63.21   | 2.46    | 0.000%  |
| 29         | 2.78                  | -63.21  | -1.61   | -2.78            | 63.21   | 1.61    | 0.000%  |
| 30         | 2.85                  | -63.21  | -0.03   | -2.85            | 63.21   | 0.03    | 0.000%  |
| 31         | 2.47                  | -63.21  | 1.40    | -2.47            | 63.21   | -1.40   | 0.000%  |
| 32         | 1.41                  | -63.21  | 2.45    | -1.41            | 63.21   | -2.45   | 0.000%  |
| 33         | -0.02                 | -63.21  | 2.84    | 0.02             | 63.21   | -2.84   | 0.000%  |
| 34         | -1.44                 | -63.21  | 2.47    | 1.44             | 63.21   | -2.47   | 0.000%  |
| 35         | -2.77                 | -63.21  | 1.61    | 2.77             | 63.21   | -1.61   | 0.000%  |
| 36         | -2.84                 | -63.21  | 0.02    | 2.84             | 63.21   | -0.02   | 0.000%  |
| 37         | -2.45                 | -63.21  | -1.40   | 2.45             | 63.21   | 1.40    | 0.000%  |
| 38         | -1.41                 | -63.21  | -2.44   | 1.41             | 63.21   | 2.44    | 0.000%  |
| 39         | 0.08                  | -30.78  | -7.09   | -0.08            | 30.78   | 7.09    | 0.000%  |
| 40         | 3.65                  | -30.78  | -6.14   | -3.65            | 30.78   | 6.14    | 0.000%  |
| 41         | 7.34                  | -30.78  | -4.25   | -7.34            | 30.78   | 4.25    | 0.000%  |
| 42         | 7.11                  | -30.78  | -0.08   | -7.11            | 30.78   | 0.08    | 0.000%  |
| 43         | 6.15                  | -30.78  | 3.47    | -6.15            | 30.78   | -3.47   | 0.000%  |
| 44         | 3.52                  | -30.78  | 6.09    | -3.52            | 30.78   | -6.09   | 0.000%  |
| 45         | -0.07                 | -30.78  | 7.08    | 0.07             | 30.78   | -7.08   | 0.000%  |
| 46         | -3.60                 | -30.78  | 6.16    | 3.60             | 30.78   | -6.16   | 0.000%  |
| 47         | -7.30                 | -30.78  | 4.25    | 7.30             | 30.78   | -4.25   | 0.000%  |
| 48         | -7.07                 | -30.78  | 0.06    | 7.07             | 30.78   | -0.06   | 0.000%  |
| 49         | -6.11                 | -30.78  | -3.47   | 6.11             | 30.78   | 3.47    | 0.000%  |
| 50         | -3.50                 | -30.78  | -6.09   | 3.50             | 30.78   | 6.09    | 0.000%  |
| 51         | 0.00                  | -43.15  | -6.15   | 0.00             | 43.15   | 6.15    | 0.000%  |
| 52         | 0.00                  | -21.48  | -6.15   | 0.00             | 21.48   | 6.15    | 0.000%  |
| 53         | 3.08                  | -43.15  | -5.33   | -3.08            | 43.15   | 5.33    | 0.000%  |
| 54         | 3.08                  | -21.48  | -5.33   | -3.08            | 21.48   | 5.33    | 0.000%  |
| 55         | 5.33                  | -43.15  | -3.08   | -5.33            | 43.15   | 3.08    | 0.000%  |
| 56         | 5.33                  | -21.48  | -3.08   | -5.33            | 21.48   | 3.08    | 0.000%  |
| 57         | 6.15                  | -43.15  | 0.00    | -6.15            | 43.15   | -0.00   | 0.000%  |
| 58         | 6.15                  | -21.48  | 0.00    | -6.15            | 21.48   | 0.00    | 0.000%  |
| 59         | 5.33                  | -43.15  | 3.08    | -5.33            | 43.15   | -3.08   | 0.000%  |
| 60         | 5.33                  | -21.48  | 3.08    | -5.33            | 21.48   | -3.08   | 0.000%  |
| 61         | 3.08                  | -43.15  | 5.33    | -3.08            | 43.15   | -5.33   | 0.000%  |
| 62         | 3.08                  | -21.48  | 5.33    | -3.08            | 21.48   | -5.33   | 0.000%  |
| 63         | 0.00                  | -43.15  | 6.15    | 0.00             | 43.15   | -6.15   | 0.000%  |
| 64         | 0.00                  | -21.48  | 6.15    | 0.00             | 21.48   | -6.15   | 0.000%  |
| 65         | -3.08                 | -43.15  | 5.33    | 3.08             | 43.15   | -5.33   | 0.000%  |
| 66         | -3.08                 | -21.48  | 5.33    | 3.08             | 21.48   | -5.33   | 0.000%  |
| 67         | -5.33                 | -43.15  | 3.08    | 5.33             | 43.15   | -3.08   | 0.000%  |
| 68         | -5.33                 | -21.48  | 3.08    | 5.33             | 21.48   | -3.08   | 0.000%  |
| 69         | -6.15                 | -43.15  | 0.00    | 6.15             | 43.15   | -0.00   | 0.000%  |
| 70         | -6.15                 | -21.48  | 0.00    | 6.15             | 21.48   | 0.00    | 0.000%  |
| 71         | -5.33                 | -43.15  | -3.08   | 5.33             | 43.15   | 3.08    | 0.000%  |
| 72         | -5.33                 | -21.48  | -3.08   | 5.33             | 21.48   | 3.08    | 0.000%  |
| 73         | -3.08                 | -43.15  | -5.33   | 3.08             | 43.15   | 5.33    | 0.000%  |
| 74         | -3.08                 | -21.48  | -5.33   | 3.08             | 21.48   | 5.33    | 0.000%  |

## Non-Linear Convergence Results

| Load Combination | Converged? | Number of Cycles | Displacement Tolerance | Force Tolerance |
|------------------|------------|------------------|------------------------|-----------------|
| 1                | Yes        | 4                | 0.00000001             | 0.00000001      |
| 2                | Yes        | 5                | 0.00000001             | 0.00006572      |
| 3                | Yes        | 4                | 0.00000001             | 0.00075901      |
| 4                | Yes        | 5                | 0.00000001             | 0.00086292      |
| 5                | Yes        | 5                | 0.00000001             | 0.00039305      |
| 6                | Yes        | 5                | 0.00000001             | 0.00094698      |
| 7                | Yes        | 5                | 0.00000001             | 0.00042421      |

|    |     |   |            |            |
|----|-----|---|------------|------------|
| 8  | Yes | 5 | 0.00000001 | 0.00010433 |
| 9  | Yes | 5 | 0.00000001 | 0.00004966 |
| 10 | Yes | 5 | 0.00000001 | 0.00079269 |
| 11 | Yes | 5 | 0.00000001 | 0.00036162 |
| 12 | Yes | 5 | 0.00000001 | 0.00087502 |
| 13 | Yes | 5 | 0.00000001 | 0.00040262 |
| 14 | Yes | 4 | 0.00000001 | 0.00050955 |
| 15 | Yes | 4 | 0.00000001 | 0.00023765 |
| 16 | Yes | 5 | 0.00000001 | 0.00087178 |
| 17 | Yes | 5 | 0.00000001 | 0.00039857 |
| 18 | Yes | 5 | 0.00000001 | 0.00093009 |
| 19 | Yes | 5 | 0.00000001 | 0.00041674 |
| 20 | Yes | 4 | 0.00000001 | 0.00071578 |
| 21 | Yes | 4 | 0.00000001 | 0.00041432 |
| 22 | Yes | 5 | 0.00000001 | 0.00084803 |
| 23 | Yes | 5 | 0.00000001 | 0.00039064 |
| 24 | Yes | 5 | 0.00000001 | 0.00079287 |
| 25 | Yes | 5 | 0.00000001 | 0.00036318 |
| 26 | Yes | 4 | 0.00000001 | 0.00004819 |
| 27 | Yes | 5 | 0.00000001 | 0.00022346 |
| 28 | Yes | 5 | 0.00000001 | 0.00023113 |
| 29 | Yes | 5 | 0.00000001 | 0.00024020 |
| 30 | Yes | 5 | 0.00000001 | 0.00022740 |
| 31 | Yes | 5 | 0.00000001 | 0.00023484 |
| 32 | Yes | 5 | 0.00000001 | 0.00023509 |
| 33 | Yes | 5 | 0.00000001 | 0.00023113 |
| 34 | Yes | 5 | 0.00000001 | 0.00023935 |
| 35 | Yes | 5 | 0.00000001 | 0.00024634 |
| 36 | Yes | 5 | 0.00000001 | 0.00022885 |
| 37 | Yes | 5 | 0.00000001 | 0.00023115 |
| 38 | Yes | 5 | 0.00000001 | 0.00022881 |
| 39 | Yes | 4 | 0.00000001 | 0.00011700 |
| 40 | Yes | 4 | 0.00000001 | 0.00050491 |
| 41 | Yes | 4 | 0.00000001 | 0.00059736 |
| 42 | Yes | 4 | 0.00000001 | 0.00017232 |
| 43 | Yes | 4 | 0.00000001 | 0.00045051 |
| 44 | Yes | 4 | 0.00000001 | 0.00056836 |
| 45 | Yes | 4 | 0.00000001 | 0.00009212 |
| 46 | Yes | 4 | 0.00000001 | 0.00053424 |
| 47 | Yes | 4 | 0.00000001 | 0.00058273 |
| 48 | Yes | 4 | 0.00000001 | 0.00011602 |
| 49 | Yes | 4 | 0.00000001 | 0.00053462 |
| 50 | Yes | 4 | 0.00000001 | 0.00045132 |
| 51 | Yes | 4 | 0.00000001 | 0.00020571 |
| 52 | Yes | 4 | 0.00000001 | 0.00004674 |
| 53 | Yes | 4 | 0.00000001 | 0.00097959 |
| 54 | Yes | 4 | 0.00000001 | 0.00042025 |
| 55 | Yes | 4 | 0.00000001 | 0.00097683 |
| 56 | Yes | 4 | 0.00000001 | 0.00041927 |
| 57 | Yes | 4 | 0.00000001 | 0.00020627 |
| 58 | Yes | 4 | 0.00000001 | 0.00004680 |
| 59 | Yes | 4 | 0.00000001 | 0.00098663 |
| 60 | Yes | 4 | 0.00000001 | 0.00042240 |
| 61 | Yes | 4 | 0.00000001 | 0.00099051 |
| 62 | Yes | 4 | 0.00000001 | 0.00042394 |
| 63 | Yes | 4 | 0.00000001 | 0.00020696 |
| 64 | Yes | 4 | 0.00000001 | 0.00004693 |
| 65 | Yes | 4 | 0.00000001 | 0.00098681 |
| 66 | Yes | 4 | 0.00000001 | 0.00042250 |
| 67 | Yes | 4 | 0.00000001 | 0.00098961 |
| 68 | Yes | 4 | 0.00000001 | 0.00042348 |
| 69 | Yes | 4 | 0.00000001 | 0.00020632 |
| 70 | Yes | 4 | 0.00000001 | 0.00004681 |
| 71 | Yes | 4 | 0.00000001 | 0.00097984 |
| 72 | Yes | 4 | 0.00000001 | 0.00042037 |
| 73 | Yes | 4 | 0.00000001 | 0.00097600 |
| 74 | Yes | 4 | 0.00000001 | 0.00041883 |

### Maximum Tower Deflections - Service Wind

| Section No. | Elevation<br>ft | Horz.<br>Deflection<br>in | Gov.<br>Load<br>Comb. | Tilt<br>° | Twist<br>° |
|-------------|-----------------|---------------------------|-----------------------|-----------|------------|
| L1          | 120 - 80.25     | 21.511                    | 41                    | 1.4980    | 0.0069     |
| L2          | 84.25 - 46      | 10.994                    | 41                    | 1.2362    | 0.0020     |
| L3          | 50.75 - 25      | 3.888                     | 41                    | 0.7284    | 0.0007     |
| L4          | 30.0833 - 0     | 1.362                     | 41                    | 0.4052    | 0.0003     |

### Critical Deflections and Radius of Curvature - Service Wind

| Elevation<br>ft | Appurtenance                                                             | Gov.<br>Load<br>Comb. | Deflection<br>in | Tilt<br>° | Twist<br>° | Radius of<br>Curvature<br>ft |
|-----------------|--------------------------------------------------------------------------|-----------------------|------------------|-----------|------------|------------------------------|
| 124.000         | RADWIN 2000C                                                             | 41                    | 21.511           | 1.4980    | 0.0093     | 31429                        |
| 122.000         | VHLPX3-18-2WH                                                            | 41                    | 21.511           | 1.4980    | 0.0093     | 31429                        |
| 120.000         | 5/8-in x 5-ft L-Rod                                                      | 41                    | 21.511           | 1.4980    | 0.0093     | 31429                        |
| 119.000         | VHLP1-23                                                                 | 41                    | 21.200           | 1.4928    | 0.0091     | 31429                        |
| 115.125         | CCISeismic Tower Section 1 - 1                                           | 41                    | 19.999           | 1.4724    | 0.0082     | 31429                        |
| 115.000         | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (110ft to120ft)        | 41                    | 19.960           | 1.4717    | 0.0082     | 31429                        |
| 111.000         | MX08FRO665-21 w/ Mount Pipe                                              | 41                    | 18.726           | 1.4499    | 0.0074     | 17460                        |
| 110.500         | CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (110ft<br>to111ft) | 41                    | 18.572           | 1.4471    | 0.0073     | 16541                        |
| 105.250         | CCISeismic Tower Section 1 - 2                                           | 41                    | 16.972           | 1.4158    | 0.0062     | 10653                        |
| 105.000         | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (100ft to110ft)        | 41                    | 16.897           | 1.4142    | 0.0061     | 10476                        |
| 95.250          | CCISeismic Tower Section 1 - 3                                           | 41                    | 14.020           | 1.3439    | 0.0043     | 6348                         |
| 95.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (90ft to100ft)         | 41                    | 13.948           | 1.3419    | 0.0043     | 6285                         |
| 90.000          | RRUS 32 B2                                                               | 41                    | 12.541           | 1.2970    | 0.0035     | 5237                         |
| 89.000          | MX06FRO840-02 w/ Mount Pipe                                              | 41                    | 12.266           | 1.2872    | 0.0033     | 5068                         |
| 85.250          | CCISeismic Tower Section 1 - 4                                           | 41                    | 11.257           | 1.2476    | 0.0029     | 4562                         |
| 85.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (80ft to90ft)          | 41                    | 11.191           | 1.2448    | 0.0028     | 4538                         |
| 84.500          | CCISeismic andrew LDF7-50A(1-<br>5/8) From 0 to 89 (80ft to89ft)         | 41                    | 11.059           | 1.2391    | 0.0028     | 4492                         |
| 80.125          | CCISeismic Tower Section 2 - 1                                           | 41                    | 9.938            | 1.1857    | 0.0023     | 4267                         |
| 80.000          | (2) TMZXX-6516-R2M w/ Mount<br>Pipe                                      | 41                    | 9.907            | 1.1841    | 0.0023     | 4263                         |
| 75.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (70ft to80ft)          | 41                    | 8.693            | 1.1159    | 0.0019     | 4117                         |
| 71.000          | CCISeismic Tower Section 2 - 2                                           | 41                    | 7.775            | 1.0570    | 0.0017     | 4007                         |
| 65.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (60ft to70ft)          | 41                    | 6.488            | 0.9631    | 0.0014     | 3854                         |
| 61.000          | CCISeismic Tower Section 2 - 3                                           | 41                    | 5.692            | 0.8981    | 0.0013     | 3757                         |
| 55.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (50ft to60ft)          | 41                    | 4.594            | 0.7988    | 0.0011     | 3622                         |
| 51.000          | CCISeismic Tower Section 2 - 4                                           | 41                    | 3.928            | 0.7326    | 0.0010     | 3535                         |
| 47.875          | CCISeismic Tower Section 3 - 1                                           | 41                    | 3.445            | 0.6814    | 0.0009     | 3467                         |
| 45.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (40ft to50ft)          | 41                    | 3.031            | 0.6349    | 0.0009     | 3404                         |
| 40.000          | CCISeismic Tower Section 3 - 2                                           | 41                    | 2.381            | 0.5556    | 0.0007     | 3300                         |
| 35.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (30ft to40ft)          | 41                    | 1.821            | 0.4785    | 0.0006     | 3203                         |
| 30.042          | CCISeismic Tower Section 4 - 1                                           | 41                    | 1.359            | 0.4046    | 0.0005     | 3219                         |
| 30.000          | CCISeismic Tower Section 3 - 3                                           | 41                    | 1.355            | 0.4040    | 0.0005     | 3221                         |
| 25.000          | CCISeismic Tower Section 4 - 2                                           | 41                    | 0.982            | 0.3323    | 0.0003     | 3745                         |
| 15.000          | CCISeismic Tower Section 4 - 3                                           | 41                    | 0.461            | 0.1955    | 0.0002     | 6241                         |
| 5.000           | CCISeismic Tower Section 4 - 4                                           | 41                    | 0.132            | 0.0645    | 0.0001     | 18724                        |

### Maximum Tower Deflections - Design Wind

| Section No. | Elevation<br>ft | Horz.<br>Deflection<br>in | Gov.<br>Load<br>Comb. | Tilt<br>° | Twist<br>° |
|-------------|-----------------|---------------------------|-----------------------|-----------|------------|
| L1          | 120 - 80.25     | 72.803                    | 6                     | 5.0734    | 0.0238     |
| L2          | 84.25 - 46      | 37.225                    | 6                     | 4.1917    | 0.0067     |
| L3          | 50.75 - 25      | 13.162                    | 6                     | 2.4679    | 0.0023     |
| L4          | 30.0833 - 0     | 4.610                     | 6                     | 1.3719    | 0.0011     |

### Critical Deflections and Radius of Curvature - Design Wind

| Elevation<br>ft | Appurtenance                                                             | Gov.<br>Load<br>Comb. | Deflection<br>in | Tilt<br>° | Twist<br>° | Radius of<br>Curvature<br>ft |
|-----------------|--------------------------------------------------------------------------|-----------------------|------------------|-----------|------------|------------------------------|
| 124.000         | RADWIN 2000C                                                             | 6                     | 72.803           | 5.0734    | 0.0307     | 9426                         |
| 122.000         | VHLPX3-18-2WH                                                            | 6                     | 72.803           | 5.0734    | 0.0307     | 9426                         |
| 120.000         | 5/8-in x 5-ft L-Rod                                                      | 6                     | 72.803           | 5.0734    | 0.0307     | 9426                         |
| 119.000         | VHLP1-23                                                                 | 6                     | 71.753           | 5.0559    | 0.0300     | 9426                         |
| 115.125         | CCISeismic Tower Section 1 - 1                                           | 6                     | 67.689           | 4.9877    | 0.0272     | 9426                         |
| 115.000         | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (110ft to120ft)        | 6                     | 67.559           | 4.9855    | 0.0271     | 9426                         |
| 111.000         | MX08FRO665-21 w/ Mount Pipe                                              | 6                     | 63.384           | 4.9123    | 0.0243     | 5236                         |
| 110.500         | CCISeismic miscl 2" Flexible<br>Conduit From 0 to 111 (110ft<br>to111ft) | 6                     | 62.865           | 4.9029    | 0.0239     | 4960                         |
| 105.250         | CCISeismic Tower Section 1 - 2                                           | 6                     | 57.453           | 4.7980    | 0.0204     | 3194                         |
| 105.000         | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (100ft to110ft)        | 6                     | 57.198           | 4.7927    | 0.0202     | 3140                         |
| 95.250          | CCISeismic Tower Section 1 - 3                                           | 6                     | 47.465           | 4.5561    | 0.0142     | 1901                         |
| 95.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (90ft to100ft)         | 6                     | 47.223           | 4.5491    | 0.0141     | 1882                         |
| 90.000          | RRUS 32 B2                                                               | 6                     | 42.461           | 4.3976    | 0.0115     | 1567                         |
| 89.000          | MX06FRO840-02 w/ Mount Pipe                                              | 6                     | 41.530           | 4.3644    | 0.0110     | 1517                         |
| 85.250          | CCISeismic Tower Section 1 - 4                                           | 6                     | 38.115           | 4.2302    | 0.0094     | 1364                         |
| 85.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (80ft to90ft)          | 6                     | 37.892           | 4.2207    | 0.0093     | 1357                         |
| 84.500          | CCISeismic andrew LDF7-50A(1-<br>5/8) From 0 to 89 (80ft to89ft)         | 6                     | 37.447           | 4.2014    | 0.0091     | 1343                         |
| 80.125          | CCISeismic Tower Section 2 - 1                                           | 6                     | 33.652           | 4.0206    | 0.0077     | 1274                         |
| 80.000          | (2) TMZXX-6516-R2M w/ Mount<br>Pipe                                      | 6                     | 33.546           | 4.0151    | 0.0076     | 1273                         |
| 75.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (70ft to80ft)          | 6                     | 29.437           | 3.7837    | 0.0063     | 1227                         |
| 71.000          | CCISeismic Tower Section 2 - 2                                           | 6                     | 26.327           | 3.5836    | 0.0055     | 1192                         |
| 65.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (60ft to70ft)          | 6                     | 21.968           | 3.2649    | 0.0047     | 1144                         |
| 61.000          | CCISeismic Tower Section 2 - 3                                           | 6                     | 19.271           | 3.0439    | 0.0042     | 1114                         |
| 55.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (50ft to60ft)          | 6                     | 15.552           | 2.7066    | 0.0037     | 1072                         |
| 51.000          | CCISeismic Tower Section 2 - 4                                           | 6                     | 13.296           | 2.4819    | 0.0034     | 1045                         |
| 47.875          | CCISeismic Tower Section 3 - 1                                           | 6                     | 11.662           | 2.3082    | 0.0031     | 1025                         |
| 45.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (40ft to50ft)          | 6                     | 10.260           | 2.1505    | 0.0029     | 1006                         |
| 40.000          | CCISeismic Tower Section 3 - 2                                           | 6                     | 8.057            | 1.8815    | 0.0024     | 976                          |
| 35.000          | CCISeismic miscl Safety Line 3/8<br>From 0 to 120 (30ft to40ft)          | 6                     | 6.163            | 1.6202    | 0.0020     | 947                          |
| 30.042          | CCISeismic Tower Section 4 - 1                                           | 6                     | 4.598            | 1.3698    | 0.0015     | 951                          |
| 30.000          | CCISeismic Tower Section 3 - 3                                           | 6                     | 4.586            | 1.3677    | 0.0015     | 952                          |
| 25.000          | CCISeismic Tower Section 4 - 2                                           | 6                     | 3.324            | 1.1247    | 0.0012     | 1107                         |
| 15.000          | CCISeismic Tower Section 4 - 3                                           | 6                     | 1.561            | 0.6617    | 0.0006     | 1844                         |
| 5.000           | CCISeismic Tower Section 4 - 4                                           | 6                     | 0.448            | 0.2184    | 0.0002     | 5531                         |

## Compression Checks

### Pole Design Data

| Section No. | Elevation<br>ft    | Size                   | L<br>ft | L <sub>u</sub><br>ft | KI/r | A<br>in <sup>2</sup> | P <sub>u</sub><br>K | φP <sub>n</sub><br>K | Ratio<br>$\frac{P_u}{\phi P_n}$ |
|-------------|--------------------|------------------------|---------|----------------------|------|----------------------|---------------------|----------------------|---------------------------------|
| L1          | 120 - 80.25<br>(1) | TP27.973x20.5x0.25     | 39.750  | 0.000                | 0.0  | 21.711<br>7          | -13.52              | 977.02               | 0.014                           |
| L2          | 80.25 - 46 (2)     | TP33.78x26.721x0.3125  | 38.250  | 0.000                | 0.0  | 32.794<br>6          | -22.22              | 1918.48              | 0.012                           |
| L3          | 46 - 25 (3)        | TP36.971x32.2784x0.375 | 25.750  | 0.000                | 0.0  | 43.071<br>1          | -27.21              | 2519.66              | 0.011                           |
| L4          | 25 - 0 (4)         | TP40.789x35.2946x0.5   | 30.083  | 0.000                | 0.0  | 64.865<br>3          | -36.92              | 2918.94              | 0.013                           |

### Pole Bending Design Data

| Section No. | Elevation<br>ft    | Size                   | M <sub>ux</sub><br>kip-ft | φM <sub>nx</sub><br>kip-ft | Ratio<br>$\frac{M_{ux}}{\phi M_{nx}}$ | M <sub>uy</sub><br>kip-ft | φM <sub>ny</sub><br>kip-ft | Ratio<br>$\frac{M_{uy}}{\phi M_{ny}}$ |
|-------------|--------------------|------------------------|---------------------------|----------------------------|---------------------------------------|---------------------------|----------------------------|---------------------------------------|
| L1          | 120 - 80.25<br>(1) | TP27.973x20.5x0.25     | 326.40                    | 644.04                     | 0.507                                 | 0.00                      | 644.04                     | 0.000                                 |
| L2          | 80.25 - 46 (2)     | TP33.78x26.721x0.3125  | 999.98                    | 1475.18                    | 0.678                                 | 0.00                      | 1475.18                    | 0.000                                 |
| L3          | 46 - 25 (3)        | TP36.971x32.2784x0.375 | 1497.08                   | 2193.85                    | 0.682                                 | 0.00                      | 2193.85                    | 0.000                                 |
| L4          | 25 - 0 (4)         | TP40.789x35.2946x0.5   | 2307.63                   | 3005.38                    | 0.768                                 | 0.00                      | 3005.38                    | 0.000                                 |

### Pole Shear Design Data

| Section No. | Elevation<br>ft    | Size                   | Actual<br>V <sub>u</sub><br>K | φV <sub>n</sub><br>K | Ratio<br>$\frac{V_u}{\phi V_n}$ | Actual<br>T <sub>u</sub><br>kip-ft | φT <sub>n</sub><br>kip-ft | Ratio<br>$\frac{T_u}{\phi T_n}$ |
|-------------|--------------------|------------------------|-------------------------------|----------------------|---------------------------------|------------------------------------|---------------------------|---------------------------------|
| L1          | 120 - 80.25<br>(1) | TP27.973x20.5x0.25     | 15.60                         | 293.11               | 0.053                           | 1.02                               | 695.38                    | 0.001                           |
| L2          | 80.25 - 46 (2)     | TP33.78x26.721x0.3125  | 22.75                         | 575.54               | 0.040                           | 0.30                               | 1649.97                   | 0.000                           |
| L3          | 46 - 25 (3)        | TP36.971x32.2784x0.375 | 25.30                         | 755.90               | 0.033                           | 0.29                               | 2371.71                   | 0.000                           |
| L4          | 25 - 0 (4)         | TP40.789x35.2946x0.5   | 28.48                         | 875.68               | 0.033                           | 1.03                               | 3103.36                   | 0.000                           |

### Pole Interaction Design Data

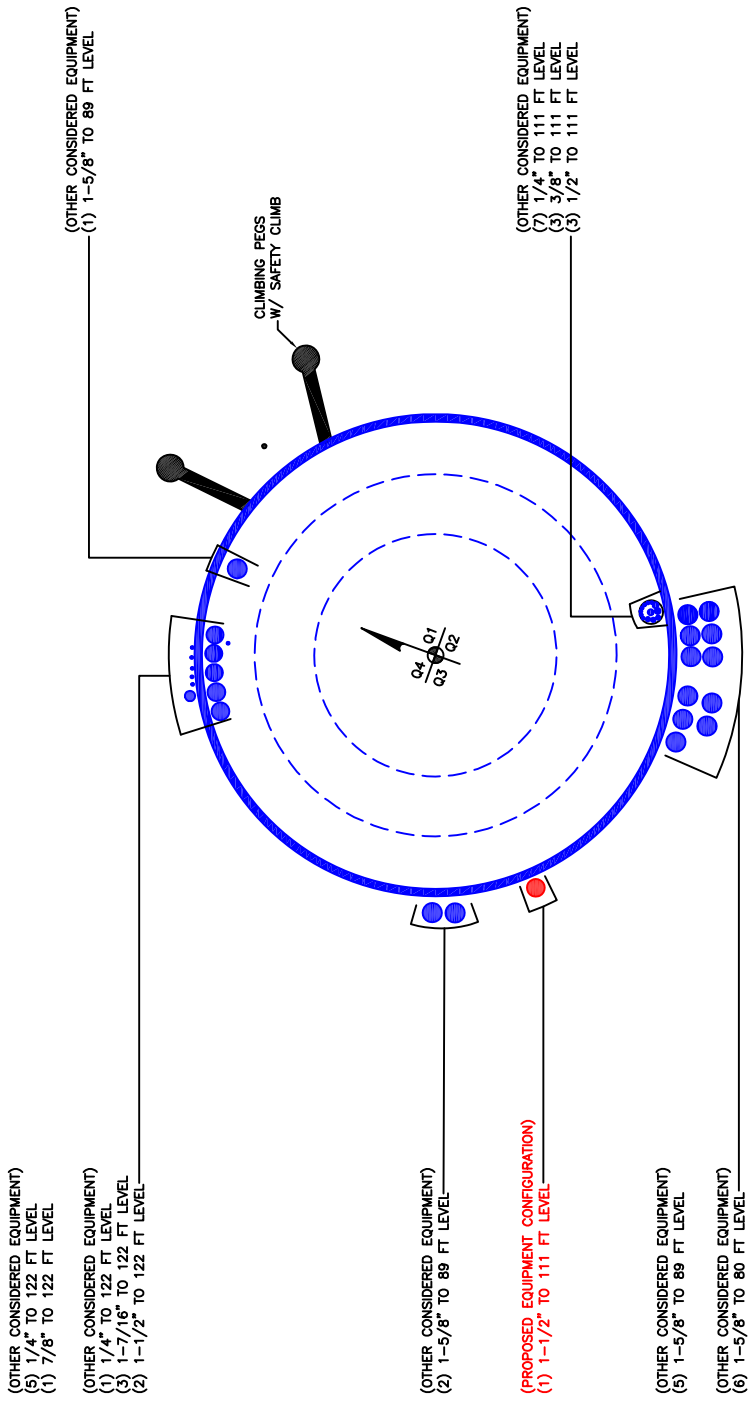
| Section No. | Elevation<br>ft    | Ratio<br>$\frac{P_u}{\phi P_n}$ | Ratio<br>$\frac{M_{ux}}{\phi M_{nx}}$ | Ratio<br>$\frac{M_{uy}}{\phi M_{ny}}$ | Ratio<br>$\frac{V_u}{\phi V_n}$ | Ratio<br>$\frac{T_u}{\phi T_n}$ | Comb.<br>Stress<br>Ratio | Allow.<br>Stress<br>Ratio | Criteria |
|-------------|--------------------|---------------------------------|---------------------------------------|---------------------------------------|---------------------------------|---------------------------------|--------------------------|---------------------------|----------|
| L1          | 120 - 80.25<br>(1) | 0.014                           | 0.507                                 | 0.000                                 | 0.053                           | 0.001                           | 0.524                    | 1.050                     | 4.8.2    |
| L2          | 80.25 - 46 (2)     | 0.012                           | 0.678                                 | 0.000                                 | 0.040                           | 0.000                           | 0.691                    | 1.050                     | 4.8.2    |
| L3          | 46 - 25 (3)        | 0.011                           | 0.682                                 | 0.000                                 | 0.033                           | 0.000                           | 0.694                    | 1.050                     | 4.8.2    |
| L4          | 25 - 0 (4)         | 0.013                           | 0.768                                 | 0.000                                 | 0.033                           | 0.000                           | 0.782                    | 1.050                     | 4.8.2    |

## Section Capacity Table

| Section No. | Elevation ft | Component Type | Size                   | Critical Element | P K    | $\phi P_{allow}$ K | % Capacity      | Pass Fail   |
|-------------|--------------|----------------|------------------------|------------------|--------|--------------------|-----------------|-------------|
| L1          | 120 - 80.25  | Pole           | TP27.973x20.5x0.25     | 1                | -13.52 | 1025.88            | 49.9            | Pass        |
| L2          | 80.25 - 46   | Pole           | TP33.78x26.721x0.3125  | 2                | -22.22 | 2014.40            | 65.8            | Pass        |
| L3          | 46 - 25      | Pole           | TP36.971x32.2784x0.375 | 3                | -27.21 | 2645.64            | 66.1            | Pass        |
| L4          | 25 - 0       | Pole           | TP40.789x35.2946x0.5   | 4                | -36.92 | 3064.89            | 74.4            | Pass        |
|             |              |                |                        |                  |        |                    | Summary         |             |
|             |              |                |                        |                  |        |                    | Pole (L4)       | 74.4        |
|             |              |                |                        |                  |        |                    | <b>RATING =</b> | <b>74.4</b> |
|             |              |                |                        |                  |        |                    |                 | <b>Pass</b> |

**APPENDIX B**  
**BASE LEVEL DRAWING**





## **APPENDIX C**

### **ADDITIONAL CALCULATIONS**

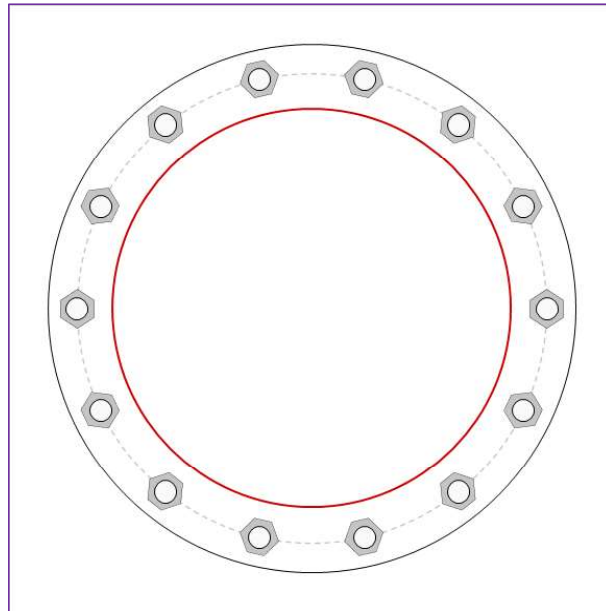
# Monopole Base Plate Connection

| Site Info |                 |
|-----------|-----------------|
| BU #      | 880329          |
| Site Name | SOUTH HILL MALL |
| Order #   | 564913 Rev.1    |

| Analysis Considerations |       |
|-------------------------|-------|
| TIA-222 Revision        | H     |
| Grout Considered:       | No    |
| $I_{ar}$ (in)           | 1.125 |

| Applied Loads      |         |
|--------------------|---------|
| Moment (kip-ft)    | 2307.63 |
| Axial Force (kips) | 36.92   |
| Shear Force (kips) | 28.48   |

\*TIA-222-H Section 15.5 Applied



| Connection Properties                                                       |  | Analysis Results                                         |                                           |
|-----------------------------------------------------------------------------|--|----------------------------------------------------------|-------------------------------------------|
| <b>Anchor Rod Data</b>                                                      |  | <b>Anchor Rod Summary</b> <i>(units of kips, kip-in)</i> |                                           |
| (14) 2-1/4" $\phi$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 48" BC |  | $Pu_t = 162.05$                                          | $\phi Pn_t = 243.75$ <b>Stress Rating</b> |
| <b>Base Plate Data</b>                                                      |  | $Vu = 2.03$                                              | $\phi Vn = 149.1$ <b>63.3%</b>            |
| 54" OD x 2.25" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)                  |  | $Mu = n/a$                                               | $\phi Mn = n/a$ <b>Pass</b>               |
| <b>Stiffener Data</b>                                                       |  | <b>Base Plate Summary</b>                                |                                           |
| N/A                                                                         |  | Max Stress (ksi):                                        | 30.61 (Flexural)                          |
| <b>Pole Data</b>                                                            |  | Allowable Stress (ksi):                                  | 45                                        |
| 40.789" x 0.5" 12-sided pole (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)          |  | Stress Rating:                                           | <b>64.8%</b> <b>Pass</b>                  |

## Monopole Base Plate Connection - Seismic

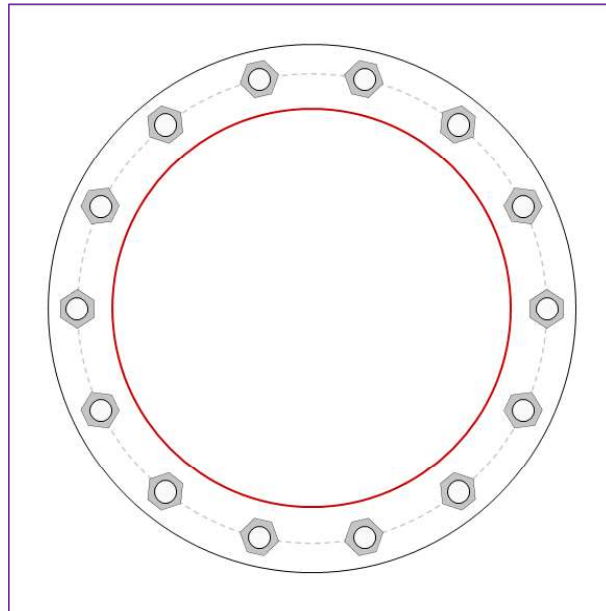
| Site Info |                 |
|-----------|-----------------|
| BU #      | 880329          |
| Site Name | SOUTH HILL MALL |
| Order #   | 564913 Rev.1    |

| Analysis Considerations |       |
|-------------------------|-------|
| TIA-222 Revision        | H     |
| Grout Considered:       | No    |
| $I_{ar}$ (in)           | 1.125 |

| Applied Loads      |        |
|--------------------|--------|
| Moment (kip-ft)    | 641.59 |
| Axial Force (kips) | 43.15  |
| Shear Force (kips) | 6.15   |

\*TIA-222-H Section 15.5 Applied

\*1.5 Overstrength Factor Applied



| Connection Properties                                                       |  | Analysis Results                                               |                                           |
|-----------------------------------------------------------------------------|--|----------------------------------------------------------------|-------------------------------------------|
| <b>Anchor Rod Data</b>                                                      |  | <b>Anchor Rod Summary</b> <span>(units of kips, kip-in)</span> |                                           |
| (14) 2-1/4" $\phi$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 48" BC |  | $Pu_t = 65.6$                                                  | $\phi Pn_t = 243.75$ <b>Stress Rating</b> |
| <b>Base Plate Data</b>                                                      |  | $Vu = 0.66$                                                    | $\phi Vn = 149.1$ <b>25.6%</b>            |
| 54" OD x 2.25" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)                  |  | $Mu = n/a$                                                     | $\phi Mn = n/a$ <b>Pass</b>               |
| <b>Stiffener Data</b>                                                       |  | <b>Base Plate Summary</b>                                      |                                           |
| N/A                                                                         |  | Max Stress (ksi):                                              | 8.95 (Flexural)                           |
| <b>Pole Data</b>                                                            |  | Allowable Stress (ksi):                                        | 45                                        |
| 40.789" x 0.5" 12-sided pole (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)          |  | Stress Rating:                                                 | <b>18.9%</b> <b>Pass</b>                  |

Drilled Pier Foundation

|                   |                 |
|-------------------|-----------------|
| BU # :            | 880329          |
| Site Name:        | SOUTH HILL MALL |
| Order Number:     | 564913 Rev.1    |
| TIA-222 Revision: | H               |
| Tower Type:       | Monopole        |



| Check Limitation                      |                                     |
|---------------------------------------|-------------------------------------|
| Apply TIA-222-H Section 15.5:         | <input checked="" type="checkbox"/> |
|                                       | N/A                                 |
| Additional Longitudinal Rebar         |                                     |
| Input Effective Depths (else Actual): | <input type="checkbox"/>            |
| Shear Design Options                  |                                     |
| Check Shear along Depth of Pier:      | <input checked="" type="checkbox"/> |
| Utilize Shear-Friction Methodology:   | <input type="checkbox"/>            |
| Override Critical Depth:              | <input type="checkbox"/>            |

[Go to Soil Calculations](#)

| Analysis Results               |  |             |        |
|--------------------------------|--|-------------|--------|
| Soil Lateral Check             |  | Compression | Uplift |
| D <sub>req</sub> (ft from TOC) |  | 5.51        | -      |
| Soil Safety Factor             |  | 2.01        | -      |
| Max Moment (kip-ft)            |  | 2454.31     | -      |
| Rating*                        |  | 63.1%       | -      |
| Soil Vertical Check            |  | Compression | Uplift |
| Skin Friction (kips)           |  | 170.42      | -      |
| End Bearing (kips)             |  | 3526.52     | -      |
| Weight of Concrete (kips)      |  | 82.92       | -      |
| Total Capacity (kips)          |  | 3696.94     | -      |
| Axial (kips)                   |  | 119.85      | -      |
| Rating*                        |  | 3.1%        | -      |
| Reinforced Concrete Flexure    |  | Compression | Uplift |
| Critical Depth (ft from TOC)   |  | 5.42        | -      |
| Critical Moment (kip-ft)       |  | 2454.22     | -      |
| Critical Moment Capacity       |  | 8133.98     | -      |
| Rating*                        |  | 28.7%       | -      |
| Reinforced Concrete Shear      |  | Compression | Uplift |
| Critical Depth (ft from TOC)   |  | 13.42       | -      |
| Critical Shear (kip)           |  | 378.42      | -      |
| Critical Shear Capacity        |  | 579.43      | -      |
| Rating*                        |  | 62.2%       | -      |
| Structural Foundation Rating*  |  | 62.2%       |        |
| Soil Interaction Rating*       |  | 63.1%       |        |

\*Rating per TIA-222-H Section 15.5

[Rebar & Pier Options](#)

[Embedded Pole Inputs](#)

[Belled Pier Inputs](#)

| Applied Loads      |         |
|--------------------|---------|
| Comp.              | Uplift  |
| Moment (kip-ft)    | 2307.62 |
| Axial Force (kips) | 36.93   |
| Shear Force (kips) | 28.46   |

| Material Properties                   |        |
|---------------------------------------|--------|
| Concrete Strength, f <sub>c</sub> :   | 4 ksi  |
| Rebar Strength, F <sub>y</sub> :      | 60 ksi |
| Tie Yield Strength, F <sub>y</sub> T: | 40 ksi |

| Pier Design Data                           |         |
|--------------------------------------------|---------|
| Depth                                      | 18.5 ft |
| Ext. Above Grade                           | 0.5 ft  |
| Pier Section 1                             |         |
| From 0.5' above grade to 18.5' below grade |         |
| Pier Diameter                              | 6 ft    |
| Rebar Quantity                             | 42      |
| Rebar Size                                 | 11      |
| Clear Cover to Ties                        | 3 in    |
| Tie Size                                   | 5       |
| Tie Spacing                                | 18 in   |

Soil Profile

|             |   |
|-------------|---|
| # of Layers | 7 |
|-------------|---|

|                   |    |
|-------------------|----|
| Groundwater Depth | 12 |
|-------------------|----|

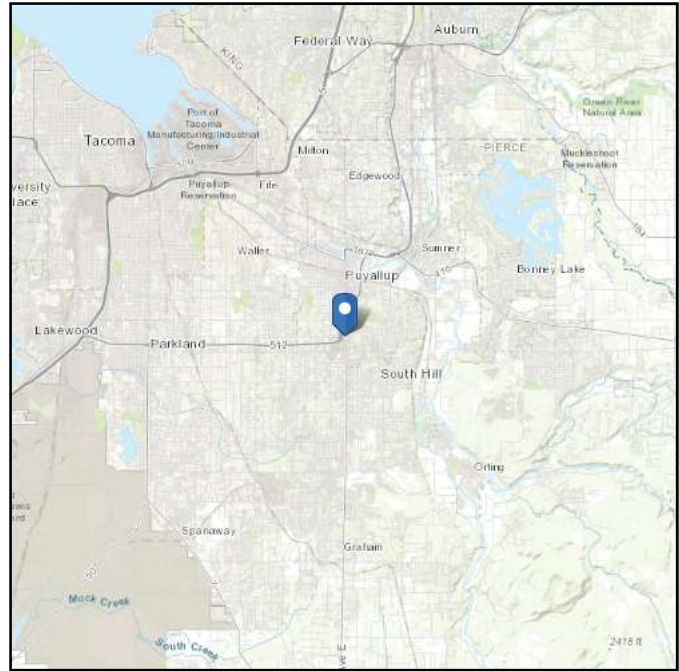
| Layer | Top (ft) | Bottom (ft) | Thickness (ft) | γ <sub>soil</sub> (pcf) | γ <sub>concrete</sub> (pcf) | Cohesion (ksf) | Angle of Friction (degrees) | Calculated Ultimate Skin Friction Comp (ksf) | Calculated Ultimate Skin Friction Uplift (ksf) | Ultimate Skin Friction Comp Override (ksf) | Ultimate Skin Friction Uplift Override (ksf) | Ult. Gross Bearing Capacity (ksf) | SPT Blow Count | Soil Type    |
|-------|----------|-------------|----------------|-------------------------|-----------------------------|----------------|-----------------------------|----------------------------------------------|------------------------------------------------|--------------------------------------------|----------------------------------------------|-----------------------------------|----------------|--------------|
| 1     | 0        | 2           | 2              | 100                     | 150                         | 0              | 0                           | 0.000                                        | 0.000                                          | 0.00                                       | 0.00                                         |                                   |                | Cohesionless |
| 2     | 2        | 3           | 1              | 113                     | 150                         | 0              | 0                           | 0.000                                        | 0.000                                          | 0.00                                       | 0.00                                         |                                   |                | Cohesionless |
| 3     | 3        | 7.5         | 4.5            | 113                     | 150                         |                | 35                          | 0.000                                        | 0.000                                          | 0.25                                       | 0.25                                         |                                   |                | Cohesionless |
| 4     | 7.5      | 12          | 4.5            | 118                     | 150                         |                | 45                          | 0.000                                        | 0.000                                          | 0.74                                       | 0.74                                         |                                   |                | Cohesionless |
| 5     | 12       | 12.5        | 0.5            | 55.6                    | 87.6                        |                | 45                          | 0.000                                        | 0.000                                          | 0.74                                       | 0.74                                         |                                   |                | Cohesionless |
| 6     | 12.5     | 17.5        | 5              | 55.6                    | 87.6                        |                | 45                          | 0.000                                        | 0.000                                          | 1.14                                       | 1.14                                         |                                   |                | Cohesionless |
| 7     | 17.5     | 18.5        | 1              | 55.6                    | 87.6                        |                | 45                          | 0.00                                         | 0.00                                           | 1.53                                       | 1.53                                         | 166.3                             |                | Cohesionless |

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** III  
**Soil Class:** D - Default (see  
Section 11.4.3)

**Elevation:** 442.51 ft (NAVD 88)  
**Latitude:** 47.162072  
**Longitude:** -122.294456



## Wind

### Results:

|              |          |
|--------------|----------|
| Wind Speed:  | 104 Vmph |
| 10-year MRI  | 67 Vmph  |
| 25-year MRI  | 73 Vmph  |
| 50-year MRI  | 78 Vmph  |
| 100-year MRI | 83 Vmph  |

Data Source: ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Sat Aug 21 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

|            |       |                    |       |
|------------|-------|--------------------|-------|
| $S_S$ :    | 1.264 | $S_{D1}$ :         | N/A   |
| $S_1$ :    | 0.436 | $T_L$ :            | 6     |
| $F_a$ :    | 1.2   | PGA :              | 0.5   |
| $F_v$ :    | N/A   | PGA <sub>M</sub> : | 0.6   |
| $S_{MS}$ : | 1.517 | $F_{PGA}$ :        | 1.2   |
| $S_{M1}$ : | N/A   | $I_e$ :            | 1.25  |
| $S_{DS}$ : | 1.011 | $C_v$ :            | 1.353 |

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

**Data Accessed:** Sat Aug 21 2021

**Date Source:** [USGS Seismic Design Maps](#)

**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 25 F  
Gust Speed: 30 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Sat Aug 21 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

---

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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BU: 880329  
 WO: 1994146  
 Order: 564913

Structure: A  
 Rev: 1

| Location                                                              |                  |                      |     |       |
|-----------------------------------------------------------------------|------------------|----------------------|-----|-------|
|                                                                       | Decimal Degrees  | Deg                  | Min | Sec   |
| Lat:                                                                  | 47.162072        | +                    | 47  | 9     |
| Long:                                                                 | -122.294456      | -                    | 122 | 17    |
|                                                                       |                  |                      |     | 43.46 |
|                                                                       |                  |                      |     | 40.04 |
| Code and Site Parameters                                              |                  |                      |     |       |
| Seismic Design Code:                                                  |                  | TIA-222-H-1          |     |       |
| Site Soil:                                                            |                  | D (Default)          |     |       |
|                                                                       |                  | Stiff Soil (Default) |     |       |
| Risk Category:                                                        |                  | III                  |     |       |
| <u>USGS Seismic Reference</u>                                         |                  |                      |     |       |
|                                                                       | S <sub>s</sub> : | 1.2640               | g   |       |
|                                                                       | S <sub>1</sub> : | 0.4360               | g   |       |
|                                                                       | T <sub>L</sub> : | 6                    | s   |       |
| Seismic Design Category Determination                                 |                  |                      |     |       |
| Importance Factor, I <sub>e</sub> :                                   |                  | 1.25                 |     |       |
| Acceleration-based site coefficient, F <sub>a</sub> :                 |                  | 1.2000               |     |       |
| Velocity-based site coefficient, F <sub>v</sub> :                     |                  | 1.8640               |     |       |
| Design spectral response acceleration short period, S <sub>DS</sub> : |                  | 1.0112 g             |     |       |
| Design spectral response acceleration 1 s period, S <sub>D1</sub> :   |                  | 0.5418 g             |     |       |
| T <sub>s</sub> :                                                      |                  | 0.5358               |     |       |
| Seismic Design Category Based on S <sub>DS</sub> :                    |                  | D                    |     |       |
| Seismic Design Category Based on S <sub>D1</sub> :                    |                  | D                    |     |       |
| Seismic Design Category Based on S <sub>1</sub> :                     |                  | N/A                  |     |       |
| Controlling Seismic Design Category:                                  |                  | D                    |     |       |



BU: 880329  
WO: 1994146  
Order: 564913

Structure: A  
Rev: 1

| Tower Details                                                          |                  |                   |                   |
|------------------------------------------------------------------------|------------------|-------------------|-------------------|
| Tower Type:                                                            | Tapered Monopole |                   |                   |
| Height, h:                                                             | 120              | ft                |                   |
| Effective Seismic Weight, W:                                           | 30.75            | kips              |                   |
| Amplification Factor, A <sub>s</sub> :                                 | 1.0              |                   | 2.7.8.1           |
| Seismic Base Shear                                                     |                  |                   |                   |
| Response Modification Factor, R:                                       | 1.5              |                   |                   |
| Discrete Appurtenance Weight in Top 1/3 of Structure, W <sub>u</sub> : | 12.27782         | kips              |                   |
| W <sub>L</sub> :                                                       | 18.47558879      | kips              |                   |
| E:                                                                     | 29000.0          | ksi               |                   |
| g:                                                                     | 386.088          | in/s <sup>2</sup> |                   |
| Average Moment of Inertia, I <sub>avg</sub> :                          | 5099.055549      | in <sup>4</sup>   |                   |
| F <sub>a</sub> :                                                       | 0.295510362      | hz                |                   |
| Approximate Fundamental Period Monopole, T <sub>a</sub> :              | 3.3840           | s                 | 2.7.7.1.3.3       |
| Seismic Response Coefficient, C <sub>s</sub>                           | 0.2001           |                   | Table 2-12 Note 3 |
| Seismic Response Coefficient Max 1, C <sub>smax</sub>                  | N/A              |                   |                   |
| Seismic Response Coefficient Max 2, C <sub>smax</sub>                  | N/A              |                   |                   |
| Seismic Response Coefficient Min 1, C <sub>smin</sub>                  | 0.0556           |                   | 2.7.7.1.1         |
| Seismic Response Coefficient Min 2, C <sub>smin</sub>                  | N/A              |                   | 2.7.7.1.1         |
| Controlling Seismic Response Coefficient, C <sub>sc</sub>              | 0.2001           |                   |                   |
| Seismic Base Shear, V                                                  | 6.155            | kips              | 2.7.7.1.1         |
| Vertical Distribution Factors                                          |                  |                   |                   |
| Period Related Exponent, k:                                            | 2.000            |                   |                   |
| Sum of w <sub>i</sub> h <sub>i</sub> <sup>k</sup>                      | 185576.41        |                   |                   |

| Tower Section Loads |        |            |                   |                       |             |          |          |          |
|---------------------|--------|------------|-------------------|-----------------------|-------------|----------|----------|----------|
| Section Number      | Length | Top Height | Mid Height, $h_x$ | Section Weight, $w_x$ | $w_x h_x^k$ | $C_{vx}$ | $F_{sh}$ | $F_{sv}$ |
| 1 - 1               | 9.75   | 120.00     | 115.13            | 0.5645                | 7481.70     | 0.0403   | 0.2481   | 0.1142   |
| 1 - 2               | 10.00  | 110.25     | 105.25            | 0.6298                | 6976.11     | 0.0376   | 0.2314   | 0.1274   |
| 1 - 3               | 10.00  | 100.25     | 95.25             | 0.6812                | 6180.01     | 0.0333   | 0.2050   | 0.1378   |
| 1 - 4               | 10.00  | 90.25      | 85.25             | 0.7326                | 5324.21     | 0.0287   | 0.1766   | 0.1482   |
| 2 - 1               | 8.25   | 84.25      | 80.13             | 0.7664                | 4920.32     | 0.0265   | 0.1632   | 0.1550   |
| 2 - 2               | 10.00  | 76.00      | 71.00             | 0.9866                | 4973.21     | 0.0268   | 0.1649   | 0.1995   |
| 2 - 3               | 10.00  | 66.00      | 61.00             | 1.0497                | 3905.75     | 0.0210   | 0.1295   | 0.2123   |
| 2 - 4               | 10.00  | 56.00      | 51.00             | 1.1128                | 2894.27     | 0.0156   | 0.0960   | 0.2250   |
| 3 - 1               | 5.75   | 50.75      | 47.88             | 0.7650                | 1753.46     | 0.0094   | 0.0582   | 0.1547   |
| 3 - 2               | 10.00  | 45.00      | 40.00             | 1.3894                | 2222.99     | 0.0120   | 0.0737   | 0.2810   |
| 3 - 3               | 10.00  | 35.00      | 30.00             | 1.4641                | 1317.72     | 0.0071   | 0.0437   | 0.2961   |
| 4 - 1               | 0.08   | 30.08      | 30.04             | 0.0159                | 14.32       | 0.0001   | 0.0005   | 0.0032   |
| 4 - 2               | 10.00  | 30.00      | 25.00             | 1.9543                | 1221.42     | 0.0066   | 0.0405   | 0.3952   |
| 4 - 3               | 10.00  | 20.00      | 15.00             | 2.0542                | 462.19      | 0.0025   | 0.0153   | 0.4154   |
| 4 - 4               | 10.00  | 10.00      | 5.00              | 2.1541                | 53.85       | 0.0003   | 0.0018   | 0.4356   |
| Sum                 |        |            |                   | 16.3203               | 49701.53    |          |          |          |

| Discrete Loads                                           |        |        |             |          |          |          |
|----------------------------------------------------------|--------|--------|-------------|----------|----------|----------|
| Name                                                     | $h_x$  | $w_x$  | $w_x h_x^k$ | $C_{vx}$ | $F_{xh}$ | $F_{xv}$ |
| lightning rod 5/8-in x 5-ft L-Rod                        | 120.00 | 0.0050 | 72.00       | 0.0004   | 0.0024   | 0.0010   |
| misc1 Top Hat 14"x24"                                    | 120.00 | 0.1000 | 1440.00     | 0.0078   | 0.0478   | 0.0202   |
| commscope FFVV-65C-R3-V1_TMO                             | 122.00 | 0.1246 | 1854.55     | 0.0100   | 0.0615   | 0.0252   |
| commscope FFVV-65C-R3-V1_TMO                             | 122.00 | 0.1246 | 1854.55     | 0.0100   | 0.0615   | 0.0252   |
| commscope FFVV-65C-R3-V1_TMO                             | 122.00 | 0.1246 | 1854.55     | 0.0100   | 0.0615   | 0.0252   |
| nokia AEHC                                               | 122.00 | 0.1000 | 1488.40     | 0.0080   | 0.0494   | 0.0202   |
| nokia AEHC                                               | 122.00 | 0.1000 | 1488.40     | 0.0080   | 0.0494   | 0.0202   |
| nokia AEHC                                               | 122.00 | 0.1000 | 1488.40     | 0.0080   | 0.0494   | 0.0202   |
| (2) commscope CDX68T-DS-43_TMO                           | 122.00 | 0.0200 | 297.68      | 0.0016   | 0.0099   | 0.0040   |
| commscope CDX68T-DS-43_TMO                               | 122.00 | 0.0100 | 148.84      | 0.0008   | 0.0049   | 0.0020   |
| commscope HCS 2.0                                        | 122.00 | 0.0014 | 20.39       | 0.0001   | 0.0007   | 0.0003   |
| commscope HCS 2.0                                        | 122.00 | 0.0014 | 20.39       | 0.0001   | 0.0007   | 0.0003   |
| nokia AHFIG_TMO                                          | 122.00 | 0.0700 | 1041.88     | 0.0056   | 0.0346   | 0.0142   |
| nokia AHFIG_TMO                                          | 122.00 | 0.0700 | 1041.88     | 0.0056   | 0.0346   | 0.0142   |
| nokia AHFIG_TMO                                          | 122.00 | 0.0700 | 1041.88     | 0.0056   | 0.0346   | 0.0142   |
| nokia AHLOA_T-MOBILE                                     | 122.00 | 0.0800 | 1190.72     | 0.0064   | 0.0395   | 0.0162   |
| nokia AHLOA_T-MOBILE                                     | 122.00 | 0.0800 | 1190.72     | 0.0064   | 0.0395   | 0.0162   |
| nokia AHLOA_T-MOBILE                                     | 122.00 | 0.0800 | 1190.72     | 0.0064   | 0.0395   | 0.0162   |
| (2) dragonwave HORIZON COMPACT PLUS                      | 122.00 | 0.0150 | 223.26      | 0.0012   | 0.0074   | 0.0030   |
| samsung telecommunications RRH-P4                        | 122.00 | 0.0600 | 893.04      | 0.0048   | 0.0296   | 0.0121   |
| samsung telecommunications RRH-P4                        | 122.00 | 0.0600 | 893.04      | 0.0048   | 0.0296   | 0.0121   |
| samsung telecommunications 2.5GHZ RRH-V3                 | 122.00 | 0.0600 | 893.04      | 0.0048   | 0.0296   | 0.0121   |
| samsung telecommunications 2.5GHZ RRH-V3                 | 122.00 | 0.0600 | 893.04      | 0.0048   | 0.0296   | 0.0121   |
| samsung telecommunications OPTIC FIBER JUNCTION CYLINDER | 122.00 | 0.0020 | 29.17       | 0.0002   | 0.0010   | 0.0004   |
| samsung telecommunications OPTIC FIBER JUNCTION CYLINDER | 122.00 | 0.0020 | 29.17       | 0.0002   | 0.0010   | 0.0004   |
| samsung telecommunications POWER JUNCTION CYLINDER       | 122.00 | 0.0033 | 49.12       | 0.0003   | 0.0016   | 0.0007   |
| samsung telecommunications POWER JUNCTION CYLINDER       | 122.00 | 0.0033 | 49.12       | 0.0003   | 0.0016   | 0.0007   |
| db spectra D57C06P36U-D w/ Mount Pipe                    | 122.00 | 0.0600 | 893.04      | 0.0048   | 0.0296   | 0.0121   |
| ceragon FIBEAIR IP-20C                                   | 122.00 | 0.0100 | 148.84      | 0.0008   | 0.0049   | 0.0020   |
| Commscope MC-CP12M-12-126                                | 122.00 | 1.5885 | 23643.23    | 0.1274   | 0.7842   | 0.3213   |
| ericsson RRUS 32 B2                                      | 90.00  | 0.0500 | 405.00      | 0.0022   | 0.0134   | 0.0101   |
| ericsson RRUS 32 B2                                      | 90.00  | 0.0500 | 405.00      | 0.0022   | 0.0134   | 0.0101   |
| ericsson RRUS 32 B2                                      | 90.00  | 0.0500 | 405.00      | 0.0022   | 0.0134   | 0.0101   |
| ericsson RRUS 32 B66A                                    | 90.00  | 0.0600 | 486.00      | 0.0026   | 0.0161   | 0.0121   |
| ericsson RRUS 32 B66A                                    | 90.00  | 0.0600 | 486.00      | 0.0026   | 0.0161   | 0.0121   |
| ericsson RRUS 32 B66A                                    | 90.00  | 0.0600 | 486.00      | 0.0026   | 0.0161   | 0.0121   |
| pipe 2.4" Dia. x 6-ft                                    | 90.00  | 0.0200 | 162.00      | 0.0009   | 0.0054   | 0.0040   |
| pipe 2.4" Dia. x 6-ft                                    | 90.00  | 0.0200 | 162.00      | 0.0009   | 0.0054   | 0.0040   |
| pipe 2.4" Dia. x 6-ft                                    | 90.00  | 0.0200 | 162.00      | 0.0009   | 0.0054   | 0.0040   |
| tower mounts Side Arm Mount [SO 901-3]                   | 90.00  | 0.3160 | 2559.52     | 0.0138   | 0.0849   | 0.0639   |
| jma wireless MX06FRO840-02 w/ Mount Pipe                 | 89.00  | 0.1259 | 997.10      | 0.0054   | 0.0331   | 0.0255   |
| jma wireless MX06FRO840-02 w/ Mount Pipe                 | 89.00  | 0.1259 | 997.10      | 0.0054   | 0.0331   | 0.0255   |
| jma wireless MX06FRO840-02 w/ Mount Pipe                 | 89.00  | 0.1259 | 997.10      | 0.0054   | 0.0331   | 0.0255   |
| jma wireless MX10FRO840-XX w/ Mount Pipe                 | 89.00  | 0.1703 | 1348.79     | 0.0073   | 0.0447   | 0.0344   |
| jma wireless MX10FRO840-XX w/ Mount Pipe                 | 89.00  | 0.1703 | 1348.79     | 0.0073   | 0.0447   | 0.0344   |
| jma wireless MX10FRO840-XX w/ Mount Pipe                 | 89.00  | 0.1703 | 1348.79     | 0.0073   | 0.0447   | 0.0344   |
| vzw Sub6 Antenna w/ Mount Pipe                           | 89.00  | 0.0900 | 712.89      | 0.0038   | 0.0236   | 0.0182   |
| vzw Sub6 Antenna w/ Mount Pipe                           | 89.00  | 0.0900 | 712.89      | 0.0038   | 0.0236   | 0.0182   |
| vzw Sub6 Antenna w/ Mount Pipe                           | 89.00  | 0.0900 | 712.89      | 0.0038   | 0.0236   | 0.0182   |
| ericsson 4449                                            | 89.00  | 0.0700 | 554.47      | 0.0030   | 0.0184   | 0.0142   |
| ericsson 4449                                            | 89.00  | 0.0700 | 554.47      | 0.0030   | 0.0184   | 0.0142   |
| ericsson 4449                                            | 89.00  | 0.0700 | 554.47      | 0.0030   | 0.0184   | 0.0142   |
| (2) ericsson RADIO 4408                                  | 89.00  | 0.0203 | 160.64      | 0.0009   | 0.0053   | 0.0041   |
| ericsson RADIO 4408                                      | 89.00  | 0.0101 | 80.32       | 0.0004   | 0.0027   | 0.0021   |
| raycap RVZDC-6627-PF-48                                  | 89.00  | 0.0300 | 237.63      | 0.0013   | 0.0079   | 0.0061   |
| raycap RVZDC-6627-PF-48                                  | 89.00  | 0.0300 | 237.63      | 0.0013   | 0.0079   | 0.0061   |
| antel BXA-70040-8CF-EDIN-X w/ Mount Pipe                 | 89.00  | 0.0977 | 773.72      | 0.0042   | 0.0257   | 0.0198   |
| antel BXA-70040-8CF-EDIN-X w/ Mount Pipe                 | 89.00  | 0.0977 | 773.72      | 0.0042   | 0.0257   | 0.0198   |
| antel BXA-70090-8CF-EDIN-X w/ Mount Pipe                 | 89.00  | 0.0707 | 559.86      | 0.0030   | 0.0186   | 0.0143   |
| tower mounts T-Arm Mount [TA 602-3_KCKR]                 | 89.00  | 1.0493 | 8311.58     | 0.0448   | 0.2757   | 0.2122   |
| (2) andrew TMZXX-6516-R2M w/ Mount Pipe                  | 80.00  | 0.1107 | 708.74      | 0.0038   | 0.0235   | 0.0224   |
| (2) andrew TMZXX-6516-R2M w/ Mount Pipe                  | 80.00  | 0.1107 | 708.74      | 0.0038   | 0.0235   | 0.0224   |
| (2) andrew TMZXX-6516-R2M w/ Mount Pipe                  | 80.00  | 0.1107 | 708.74      | 0.0038   | 0.0235   | 0.0224   |
| commscope FFHH-65C-R3 w/ Mount Pipe                      | 80.00  | 0.1605 | 1027.26     | 0.0055   | 0.0341   | 0.0325   |
| commscope FFHH-65C-R3 w/ Mount Pipe                      | 80.00  | 0.1605 | 1027.26     | 0.0055   | 0.0341   | 0.0325   |
| commscope FFHH-65C-R3 w/ Mount Pipe                      | 80.00  | 0.1605 | 1027.26     | 0.0055   | 0.0341   | 0.0325   |
| nokia FRIG                                               | 80.00  | 0.0600 | 384.00      | 0.0021   | 0.0127   | 0.0121   |
| nokia FRIG                                               | 80.00  | 0.0600 | 384.00      | 0.0021   | 0.0127   | 0.0121   |
| nokia FRIG                                               | 80.00  | 0.0600 | 384.00      | 0.0021   | 0.0127   | 0.0121   |
| nokia FHFB                                               | 80.00  | 0.0500 | 320.00      | 0.0017   | 0.0106   | 0.0101   |
| nokia FHFB                                               | 80.00  | 0.0500 | 320.00      | 0.0017   | 0.0106   | 0.0101   |
| nokia FHFB                                               | 80.00  | 0.0500 | 320.00      | 0.0017   | 0.0106   | 0.0101   |
| nokia AHLOA                                              | 80.00  | 0.0800 | 512.00      | 0.0028   | 0.0170   | 0.0162   |
| nokia AHLOA                                              | 80.00  | 0.0800 | 512.00      | 0.0028   | 0.0170   | 0.0162   |
| nokia AHLOA                                              | 80.00  | 0.0800 | 512.00      | 0.0028   | 0.0170   | 0.0162   |
| commscope CBC6AE7LQ-DS-43                                | 80.00  | 0.0200 | 128.00      | 0.0007   | 0.0042   | 0.0040   |
| commscope CBC6AE7LQ-DS-43                                | 80.00  | 0.0200 | 128.00      | 0.0007   | 0.0042   | 0.0040   |
| commscope CBC6AE7LQ-DS-43                                | 80.00  | 0.0200 | 128.00      | 0.0007   | 0.0042   | 0.0040   |
| nokia FRLB                                               | 80.00  | 0.0600 | 384.00      | 0.0021   | 0.0127   | 0.0121   |
| raycap RNSDC-7771-PF-48                                  | 80.00  | 0.0200 | 128.00      | 0.0007   | 0.0042   | 0.0040   |

|                                          |        |         |           |        |        |        |
|------------------------------------------|--------|---------|-----------|--------|--------|--------|
| tower mounts Platform Mount [LP 303-1]   | 80.00  | 1.2500  | 8000.00   | 0.0431 | 0.2653 | 0.2528 |
| jma wireless MX08FRO665-21 w/ Mount Pipe | 111.00 | 0.1081  | 1331.78   | 0.0072 | 0.0442 | 0.0219 |
| jma wireless MX08FRO665-21 w/ Mount Pipe | 111.00 | 0.1081  | 1331.78   | 0.0072 | 0.0442 | 0.0219 |
| jma wireless MX08FRO665-21 w/ Mount Pipe | 111.00 | 0.1081  | 1331.78   | 0.0072 | 0.0442 | 0.0219 |
| fujitsu TA08025-B604                     | 111.00 | 0.0600  | 739.26    | 0.0040 | 0.0245 | 0.0121 |
| fujitsu TA08025-B604                     | 111.00 | 0.0600  | 739.26    | 0.0040 | 0.0245 | 0.0121 |
| fujitsu TA08025-B604                     | 111.00 | 0.0600  | 739.26    | 0.0040 | 0.0245 | 0.0121 |
| fujitsu TA08025-B605                     | 111.00 | 0.0800  | 985.68    | 0.0053 | 0.0327 | 0.0162 |
| fujitsu TA08025-B605                     | 111.00 | 0.0800  | 985.68    | 0.0053 | 0.0327 | 0.0162 |
| fujitsu TA08025-B605                     | 111.00 | 0.0800  | 985.68    | 0.0053 | 0.0327 | 0.0162 |
| raycap RDIDC-9181-PF-48                  | 111.00 | 0.0200  | 246.42    | 0.0013 | 0.0082 | 0.0040 |
| (2) tower mounts 8' x 2" Mount Pipe      | 111.00 | 0.0600  | 739.26    | 0.0040 | 0.0245 | 0.0121 |
| (2) tower mounts 8' x 2" Mount Pipe      | 111.00 | 0.0600  | 739.26    | 0.0040 | 0.0245 | 0.0121 |
| (2) tower mounts 8' x 2" Mount Pipe      | 111.00 | 0.0600  | 739.26    | 0.0040 | 0.0245 | 0.0121 |
| tower mounts Commscope MC-PK8-DSH        | 111.00 | 1.7490  | 21549.43  | 0.1161 | 0.7147 | 0.3537 |
| VHLP1-23                                 | 122.00 | 0.0140  | 208.38    | 0.0011 | 0.0069 | 0.0028 |
| VHLPX3-18-2WH                            | 122.00 | 0.0500  | 744.20    | 0.0040 | 0.0247 | 0.0101 |
| radwin RADWIN 2000C                      | 122.00 | 0.0070  | 104.19    | 0.0006 | 0.0035 | 0.0014 |
| (2) radwin RADWIN 2000C                  | 122.00 | 0.0140  | 208.38    | 0.0011 | 0.0069 | 0.0028 |
| Sum                                      |        | 12.2778 | 128150.37 |        |        |        |

| Linear Loads                                                |              |            |        |        |             |          |          |          |
|-------------------------------------------------------------|--------------|------------|--------|--------|-------------|----------|----------|----------|
| Name                                                        | Start Height | End Height | $h_x$  | $w_x$  | $w_x h_x^k$ | $C_{vx}$ | $F_{sh}$ | $F_{sv}$ |
| misc Safety Line 3/8 From 0 to 120                          | 110.00       | 120.00     | 115.00 | 0.0022 | 29.10       | 0.0002   | 0.0010   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 100.00       | 110.00     | 105.00 | 0.0022 | 24.26       | 0.0001   | 0.0008   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 90.00        | 100.00     | 95.00  | 0.0022 | 19.86       | 0.0001   | 0.0007   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 80.00        | 90.00      | 85.00  | 0.0022 | 15.90       | 0.0001   | 0.0005   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 70.00        | 80.00      | 75.00  | 0.0022 | 12.38       | 0.0001   | 0.0004   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 60.00        | 70.00      | 65.00  | 0.0022 | 9.30        | 0.0001   | 0.0003   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 50.00        | 60.00      | 55.00  | 0.0022 | 6.66        | 0.0000   | 0.0002   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 40.00        | 50.00      | 45.00  | 0.0022 | 4.46        | 0.0000   | 0.0001   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 30.00        | 40.00      | 35.00  | 0.0022 | 2.70        | 0.0000   | 0.0001   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 20.00        | 30.00      | 25.00  | 0.0022 | 1.38        | 0.0000   | 0.0000   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 10.00        | 20.00      | 15.00  | 0.0022 | 0.50        | 0.0000   | 0.0000   | 0.0004   |
| misc Safety Line 3/8 From 0 to 120                          | 0.00         | 10.00      | 5.00   | 0.0022 | 0.06        | 0.0000   | 0.0000   | 0.0004   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 110.00       | 120.00     | 115.00 | 0.0006 | 7.94        | 0.0000   | 0.0003   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 100.00       | 110.00     | 105.00 | 0.0006 | 6.62        | 0.0000   | 0.0002   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 90.00        | 100.00     | 95.00  | 0.0006 | 5.42        | 0.0000   | 0.0002   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 80.00        | 90.00      | 85.00  | 0.0006 | 4.34        | 0.0000   | 0.0001   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 70.00        | 80.00      | 75.00  | 0.0006 | 3.38        | 0.0000   | 0.0001   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 60.00        | 70.00      | 65.00  | 0.0006 | 2.54        | 0.0000   | 0.0001   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 50.00        | 60.00      | 55.00  | 0.0006 | 1.82        | 0.0000   | 0.0001   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 40.00        | 50.00      | 45.00  | 0.0006 | 1.22        | 0.0000   | 0.0000   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 30.00        | 40.00      | 35.00  | 0.0006 | 0.74        | 0.0000   | 0.0000   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 20.00        | 30.00      | 25.00  | 0.0006 | 0.38        | 0.0000   | 0.0000   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 10.00        | 20.00      | 15.00  | 0.0006 | 0.14        | 0.0000   | 0.0000   | 0.0001   |
| andrew LDF1-50A(1/4) From 0 to 120                          | 0.00         | 10.00      | 5.00   | 0.0006 | 0.02        | 0.0000   | 0.0000   | 0.0001   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 110.00       | 120.00     | 115.00 | 0.0050 | 66.13       | 0.0004   | 0.0022   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 100.00       | 110.00     | 105.00 | 0.0050 | 55.13       | 0.0003   | 0.0018   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 90.00        | 100.00     | 95.00  | 0.0050 | 45.13       | 0.0002   | 0.0015   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 80.00        | 90.00      | 85.00  | 0.0050 | 36.13       | 0.0002   | 0.0012   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 70.00        | 80.00      | 75.00  | 0.0050 | 28.13       | 0.0002   | 0.0009   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 60.00        | 70.00      | 65.00  | 0.0050 | 21.13       | 0.0001   | 0.0007   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 50.00        | 60.00      | 55.00  | 0.0050 | 15.13       | 0.0001   | 0.0005   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 40.00        | 50.00      | 45.00  | 0.0050 | 10.13       | 0.0001   | 0.0003   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 30.00        | 40.00      | 35.00  | 0.0050 | 6.13        | 0.0000   | 0.0002   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 20.00        | 30.00      | 25.00  | 0.0050 | 3.13        | 0.0000   | 0.0001   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 10.00        | 20.00      | 15.00  | 0.0050 | 1.13        | 0.0000   | 0.0000   | 0.0010   |
| (5) belkin CAT5E(1/4") From 0 to 120                        | 0.00         | 10.00      | 5.00   | 0.0050 | 0.13        | 0.0000   | 0.0000   | 0.0010   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 110.00       | 120.00     | 115.00 | 0.0030 | 39.68       | 0.0002   | 0.0013   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 100.00       | 110.00     | 105.00 | 0.0030 | 33.08       | 0.0002   | 0.0011   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 90.00        | 100.00     | 95.00  | 0.0030 | 27.08       | 0.0001   | 0.0009   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 80.00        | 90.00      | 85.00  | 0.0030 | 21.68       | 0.0001   | 0.0007   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 70.00        | 80.00      | 75.00  | 0.0030 | 16.88       | 0.0001   | 0.0006   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 60.00        | 70.00      | 65.00  | 0.0030 | 12.68       | 0.0001   | 0.0004   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 50.00        | 60.00      | 55.00  | 0.0030 | 9.08        | 0.0000   | 0.0003   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 40.00        | 50.00      | 45.00  | 0.0030 | 6.08        | 0.0000   | 0.0002   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 30.00        | 40.00      | 35.00  | 0.0030 | 3.68        | 0.0000   | 0.0001   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 20.00        | 30.00      | 25.00  | 0.0030 | 1.88        | 0.0000   | 0.0001   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 10.00        | 20.00      | 15.00  | 0.0030 | 0.68        | 0.0000   | 0.0000   | 0.0006   |
| andrew AVA5-50( 7/8") From 0 to 120                         | 0.00         | 10.00      | 5.00   | 0.0030 | 0.08        | 0.0000   | 0.0000   | 0.0006   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 110.00       | 120.00     | 115.00 | 0.0180 | 238.05      | 0.0013   | 0.0079   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 100.00       | 110.00     | 105.00 | 0.0180 | 198.45      | 0.0011   | 0.0066   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 90.00        | 100.00     | 95.00  | 0.0180 | 162.45      | 0.0009   | 0.0054   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 80.00        | 90.00      | 85.00  | 0.0180 | 130.05      | 0.0007   | 0.0043   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 70.00        | 80.00      | 75.00  | 0.0180 | 101.25      | 0.0005   | 0.0034   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 60.00        | 70.00      | 65.00  | 0.0180 | 76.05       | 0.0004   | 0.0025   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 50.00        | 60.00      | 55.00  | 0.0180 | 54.45       | 0.0003   | 0.0018   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 40.00        | 50.00      | 45.00  | 0.0180 | 36.45       | 0.0002   | 0.0012   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 30.00        | 40.00      | 35.00  | 0.0180 | 22.05       | 0.0001   | 0.0007   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 20.00        | 30.00      | 25.00  | 0.0180 | 11.25       | 0.0001   | 0.0004   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 10.00        | 20.00      | 15.00  | 0.0180 | 4.05        | 0.0000   | 0.0001   | 0.0036   |
| (3) samsung telecommunications TYPE 2(1-7/16) From 0 to 120 | 0.00         | 10.00      | 5.00   | 0.0180 | 0.45        | 0.0000   | 0.0000   | 0.0036   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 110.00       | 120.00     | 115.00 | 0.0342 | 452.30      | 0.0024   | 0.0150   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 100.00       | 110.00     | 105.00 | 0.0342 | 377.06      | 0.0020   | 0.0125   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 90.00        | 100.00     | 95.00  | 0.0342 | 308.66      | 0.0017   | 0.0102   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 80.00        | 90.00      | 85.00  | 0.0342 | 247.10      | 0.0013   | 0.0082   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 70.00        | 80.00      | 75.00  | 0.0342 | 192.38      | 0.0010   | 0.0064   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 60.00        | 70.00      | 65.00  | 0.0342 | 144.50      | 0.0008   | 0.0048   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 50.00        | 60.00      | 55.00  | 0.0342 | 103.46      | 0.0006   | 0.0034   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 40.00        | 50.00      | 45.00  | 0.0342 | 69.26       | 0.0004   | 0.0023   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 30.00        | 40.00      | 35.00  | 0.0342 | 41.90       | 0.0002   | 0.0014   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 20.00        | 30.00      | 25.00  | 0.0342 | 21.38       | 0.0001   | 0.0007   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 10.00        | 20.00      | 15.00  | 0.0342 | 7.70        | 0.0000   | 0.0003   | 0.0069   |
| (2) nokia HCS 2.0 Part 3(1-1/2) From 0 to 120               | 0.00         | 10.00      | 5.00   | 0.0342 | 0.86        | 0.0000   | 0.0000   | 0.0069   |
| misc 2" Flexible Conduit From 0 to 111                      | 110.00       | 111.00     | 110.50 | 0.0003 | 4.15        | 0.0000   | 0.0001   | 0.0001   |
| misc 2" Flexible Conduit From 0 to 111                      | 100.00       | 110.00     | 105.00 | 0.0034 | 37.49       | 0.0002   | 0.0012   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 90.00        | 100.00     | 95.00  | 0.0034 | 30.69       | 0.0002   | 0.0010   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 80.00        | 90.00      | 85.00  | 0.0034 | 24.57       | 0.0001   | 0.0008   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 70.00        | 80.00      | 75.00  | 0.0034 | 19.13       | 0.0001   | 0.0006   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 60.00        | 70.00      | 65.00  | 0.0034 | 14.37       | 0.0001   | 0.0005   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 50.00        | 60.00      | 55.00  | 0.0034 | 10.29       | 0.0001   | 0.0003   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 40.00        | 50.00      | 45.00  | 0.0034 | 6.89        | 0.0000   | 0.0002   | 0.0007   |
| misc 2" Flexible Conduit From 0 to 111                      | 30.00        | 40.00      | 35.00  | 0.0034 | 4.17        | 0.0000   | 0.0001   | 0.0007   |

|                                             |        |        |        |        |        |        |        |        |
|---------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| misc 2" Flexible Conduit From 0 to 111      | 20.00  | 30.00  | 25.00  | 0.0034 | 2.13   | 0.0000 | 0.0001 | 0.0007 |
| misc 2" Flexible Conduit From 0 to 111      | 10.00  | 20.00  | 15.00  | 0.0034 | 0.77   | 0.0000 | 0.0000 | 0.0007 |
| misc 2" Flexible Conduit From 0 to 111      | 0.00   | 10.00  | 5.00   | 0.0034 | 0.09   | 0.0000 | 0.0000 | 0.0007 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 110.00 | 111.00 | 110.50 | 0.0004 | 5.13   | 0.0000 | 0.0002 | 0.0001 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 100.00 | 110.00 | 105.00 | 0.0042 | 46.31  | 0.0002 | 0.0015 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 90.00  | 100.00 | 95.00  | 0.0042 | 37.91  | 0.0002 | 0.0013 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 80.00  | 90.00  | 85.00  | 0.0042 | 30.35  | 0.0002 | 0.0010 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 70.00  | 80.00  | 75.00  | 0.0042 | 23.63  | 0.0001 | 0.0008 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 60.00  | 70.00  | 65.00  | 0.0042 | 17.75  | 0.0001 | 0.0006 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 50.00  | 60.00  | 55.00  | 0.0042 | 12.71  | 0.0001 | 0.0004 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 40.00  | 50.00  | 45.00  | 0.0042 | 8.51   | 0.0000 | 0.0003 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 30.00  | 40.00  | 35.00  | 0.0042 | 5.15   | 0.0000 | 0.0002 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 20.00  | 30.00  | 25.00  | 0.0042 | 2.63   | 0.0000 | 0.0001 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 10.00  | 20.00  | 15.00  | 0.0042 | 0.95   | 0.0000 | 0.0000 | 0.0008 |
| (7) andrew LDF1-50A(1/4") From 0 to 111     | 0.00   | 10.00  | 5.00   | 0.0042 | 0.11   | 0.0000 | 0.0000 | 0.0008 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 110.00 | 111.00 | 110.50 | 0.0002 | 2.93   | 0.0000 | 0.0001 | 0.0000 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 100.00 | 110.00 | 105.00 | 0.0024 | 26.46  | 0.0001 | 0.0009 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 90.00  | 100.00 | 95.00  | 0.0024 | 21.66  | 0.0001 | 0.0007 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 80.00  | 90.00  | 85.00  | 0.0024 | 17.34  | 0.0001 | 0.0006 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 70.00  | 80.00  | 75.00  | 0.0024 | 13.50  | 0.0001 | 0.0004 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 60.00  | 70.00  | 65.00  | 0.0024 | 10.14  | 0.0001 | 0.0003 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 50.00  | 60.00  | 55.00  | 0.0024 | 7.26   | 0.0000 | 0.0002 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 40.00  | 50.00  | 45.00  | 0.0024 | 4.86   | 0.0000 | 0.0002 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 30.00  | 40.00  | 35.00  | 0.0024 | 2.94   | 0.0000 | 0.0001 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 20.00  | 30.00  | 25.00  | 0.0024 | 1.50   | 0.0000 | 0.0000 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 10.00  | 20.00  | 15.00  | 0.0024 | 0.54   | 0.0000 | 0.0000 | 0.0005 |
| (3) andrew LDF2-50A(3/8") From 0 to 111     | 0.00   | 10.00  | 5.00   | 0.0024 | 0.06   | 0.0000 | 0.0000 | 0.0005 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 110.00 | 111.00 | 110.50 | 0.0005 | 5.49   | 0.0000 | 0.0002 | 0.0001 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 100.00 | 110.00 | 105.00 | 0.0045 | 49.61  | 0.0003 | 0.0016 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 90.00  | 100.00 | 95.00  | 0.0045 | 40.61  | 0.0002 | 0.0013 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 80.00  | 90.00  | 85.00  | 0.0045 | 32.51  | 0.0002 | 0.0011 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 70.00  | 80.00  | 75.00  | 0.0045 | 25.31  | 0.0001 | 0.0008 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 60.00  | 70.00  | 65.00  | 0.0045 | 19.01  | 0.0001 | 0.0006 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 50.00  | 60.00  | 55.00  | 0.0045 | 13.61  | 0.0001 | 0.0005 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 40.00  | 50.00  | 45.00  | 0.0045 | 9.11   | 0.0000 | 0.0003 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 30.00  | 40.00  | 35.00  | 0.0045 | 5.51   | 0.0000 | 0.0002 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 20.00  | 30.00  | 25.00  | 0.0045 | 2.81   | 0.0000 | 0.0001 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 10.00  | 20.00  | 15.00  | 0.0045 | 1.01   | 0.0000 | 0.0000 | 0.0009 |
| (3) commscope CR 50 540(1/2") From 0 to 111 | 0.00   | 10.00  | 5.00   | 0.0045 | 0.11   | 0.0000 | 0.0000 | 0.0009 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 80.00  | 89.00  | 84.50  | 0.0074 | 52.70  | 0.0003 | 0.0017 | 0.0015 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 70.00  | 80.00  | 75.00  | 0.0082 | 46.13  | 0.0002 | 0.0015 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 60.00  | 70.00  | 65.00  | 0.0082 | 34.65  | 0.0002 | 0.0011 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 50.00  | 60.00  | 55.00  | 0.0082 | 24.81  | 0.0001 | 0.0008 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 40.00  | 50.00  | 45.00  | 0.0082 | 16.61  | 0.0001 | 0.0006 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 30.00  | 40.00  | 35.00  | 0.0082 | 10.05  | 0.0001 | 0.0003 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 20.00  | 30.00  | 25.00  | 0.0082 | 5.13   | 0.0000 | 0.0002 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 10.00  | 20.00  | 15.00  | 0.0082 | 1.85   | 0.0000 | 0.0001 | 0.0017 |
| andrew LDF7-50A(1-5/8) From 0 to 89         | 0.00   | 10.00  | 5.00   | 0.0082 | 0.21   | 0.0000 | 0.0000 | 0.0017 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 80.00  | 89.00  | 84.50  | 0.0148 | 105.39 | 0.0006 | 0.0035 | 0.0030 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 70.00  | 80.00  | 75.00  | 0.0164 | 92.25  | 0.0005 | 0.0031 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 60.00  | 70.00  | 65.00  | 0.0164 | 69.29  | 0.0004 | 0.0023 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 50.00  | 60.00  | 55.00  | 0.0164 | 49.61  | 0.0003 | 0.0016 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 40.00  | 50.00  | 45.00  | 0.0164 | 33.21  | 0.0002 | 0.0011 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 30.00  | 40.00  | 35.00  | 0.0164 | 20.09  | 0.0001 | 0.0007 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 20.00  | 30.00  | 25.00  | 0.0164 | 10.25  | 0.0001 | 0.0003 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 10.00  | 20.00  | 15.00  | 0.0164 | 3.69   | 0.0000 | 0.0001 | 0.0033 |
| (2) andrew LDF7-50A(1-5/8) From 0 to 89     | 0.00   | 10.00  | 5.00   | 0.0164 | 0.41   | 0.0000 | 0.0000 | 0.0033 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 80.00  | 89.00  | 84.50  | 0.0369 | 263.48 | 0.0014 | 0.0087 | 0.0075 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 70.00  | 80.00  | 75.00  | 0.0410 | 230.63 | 0.0012 | 0.0076 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 60.00  | 70.00  | 65.00  | 0.0410 | 173.23 | 0.0009 | 0.0057 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 50.00  | 60.00  | 55.00  | 0.0410 | 124.03 | 0.0007 | 0.0041 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 40.00  | 50.00  | 45.00  | 0.0410 | 83.03  | 0.0004 | 0.0028 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 30.00  | 40.00  | 35.00  | 0.0410 | 50.23  | 0.0003 | 0.0017 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 20.00  | 30.00  | 25.00  | 0.0410 | 25.63  | 0.0001 | 0.0008 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 10.00  | 20.00  | 15.00  | 0.0410 | 9.23   | 0.0000 | 0.0003 | 0.0083 |
| (5) andrew LDF7-50A(1-5/8) From 0 to 89     | 0.00   | 10.00  | 5.00   | 0.0410 | 1.03   | 0.0000 | 0.0000 | 0.0083 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 70.00  | 80.00  | 75.00  | 0.0492 | 276.75 | 0.0015 | 0.0092 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 60.00  | 70.00  | 65.00  | 0.0492 | 207.87 | 0.0011 | 0.0069 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 50.00  | 60.00  | 55.00  | 0.0492 | 148.83 | 0.0008 | 0.0049 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 40.00  | 50.00  | 45.00  | 0.0492 | 99.63  | 0.0005 | 0.0033 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 30.00  | 40.00  | 35.00  | 0.0492 | 60.27  | 0.0003 | 0.0020 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 20.00  | 30.00  | 25.00  | 0.0492 | 30.75  | 0.0002 | 0.0010 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 10.00  | 20.00  | 15.00  | 0.0492 | 11.07  | 0.0001 | 0.0004 | 0.0100 |
| (6) andrew LDF7-50A(1-5/8") From 0 to 80    | 0.00   | 10.00  | 5.00   | 0.0492 | 1.23   | 0.0000 | 0.0000 | 0.0100 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 110.00 | 111.00 | 110.50 | 0.0024 | 28.69  | 0.0002 | 0.0010 | 0.0005 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 100.00 | 110.00 | 105.00 | 0.0235 | 259.09 | 0.0014 | 0.0086 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 90.00  | 100.00 | 95.00  | 0.0235 | 212.09 | 0.0011 | 0.0070 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 80.00  | 90.00  | 85.00  | 0.0235 | 169.79 | 0.0009 | 0.0056 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 70.00  | 80.00  | 75.00  | 0.0235 | 132.19 | 0.0007 | 0.0044 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 60.00  | 70.00  | 65.00  | 0.0235 | 99.29  | 0.0005 | 0.0033 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 50.00  | 60.00  | 55.00  | 0.0235 | 71.09  | 0.0004 | 0.0024 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 40.00  | 50.00  | 45.00  | 0.0235 | 47.59  | 0.0003 | 0.0016 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 30.00  | 40.00  | 35.00  | 0.0235 | 28.79  | 0.0002 | 0.0010 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 20.00  | 30.00  | 25.00  | 0.0235 | 14.69  | 0.0001 | 0.0005 | 0.0048 |
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111      | 10.00  | 20.00  | 15.00  | 0.0235 | 5.29   | 0.0000 | 0.0002 | 0.0048 |

|                                        |      |       |      |        |         |        |        |        |
|----------------------------------------|------|-------|------|--------|---------|--------|--------|--------|
| cui CU12PSM9P6XXX(1-1/2) From 0 to 111 | 0.00 | 10.00 | 5.00 | 0.0235 | 0.59    | 0.0000 | 0.0000 | 0.0048 |
| Sum                                    |      |       |      | 2.1552 | 7724.51 |        |        |        |